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ABSTRACT

Minutes from the 1984 Membership Meeting of the Association of Research Libraries include the full-text of four presented papers: "The Next Generation of Telecommunications Systems" (William F. Utlaut); "Structure of the Present Telecommunications Network" (Donald J. Muccino); "Alternatives to the Bell System" (C. Thomas Taylor); and "The Political and Social Impact of Changes for Libraries" (Walter G. Bolter). Discussion comments follow the last two papers and a three-member panel reacts to the fourth. Session II of the Business Meeting is covered in detail and comprises remarks from five members of the Preservation Panel as well as eight reports: (1) ARL Executive Director; (2) Council on Library Resources Economics Seminar; (3) Committee on ARL Statistics; (4) ARL Microform Cataloging Clearinghouse; (5) Council on Library Resources (CLR) Bibliographic Services Development Program; (6) Office of Management Studies; (7) Council on Library Resources Professional Education and Training for Research Librarians Program; and (8) ARL President. Eight appendices of supporting information include the Executive Director's Report; a CLR paper, "Preserving Our Intellectual Heritage: General Directions and Next Steps"; a Progress Report on the CLR Bibliographic Services Development Program; lists of attendance from member institutions, members, and guests and staff; a list of officers, the board, and committees of ARL; and the 1983 Auditor's report. (THC)

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April 25-27, 1984
Colorado Springs, Colorado

Minutes of the 104th Meeting

The Association of Research Libraries

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Telecommunications and Research Libraries: 1984 and Beyond

Minutes of the 104th Meeting

April 25-27, 1984
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ASSOCIATION OF RESEARCH LIBRARIES

Minutes of the 104th Meeting

Eldred Smith, Presiding

The 104th Membership Meeting of the Association of Research Libraries was held at The Broadmoor, Colorado Springs, Colorado, on April 25-27, 1984. The program session convened on April 26.

INTRODUCTION

MR. SMITH (University of Minnesota): Welcome to the 104th ARL Membership Meeting.

Before we begin, there is a special matter I wish to bring before you. During this past year, we lost someone whose contributions were so substantial to the profession of research libraries and to our organization that I believe we have an obligation to take notice of his passing. I would ask you to join me in a few moments of silence in honor of Keyes Metcalf. Thank you very much.

I would now like to turn the program over to the individual who has planned and organized it, a colleague who certainly needs no introduction, the Director of Libraries at Illinois Cow College, Hugh Atkinson.

MR. ATKINSON (University of Illinois): For those of you from the Ivy League: cow is the one that goes moo; pig is the one that goes oink.

Telecommunications is a topic of great interest to us all. If you want to know why we arranged the program in the way we did, it is because the present is so depressing that we thought we would deal with the future first. Almost all of the speakers have wondered why librarians are that interested in this field; when we mentioned the size of both our telecommunication bills with the utilities and our regular telephone bills on our campuses, they recognized our intense interest.

The first presentation is on the next generation of the telecommunication systems, and it is presented by William F. Utlaut, the Director of the Institute for Telecommunications Sciences of the National Telecommunication and Information Agency, which is a unit of the U.S. Department of Commerce.

THE NEXT GENERATION OF TELECOMMUNICATIONS SYSTEMS

William F. Utlaut
Institute for Telecommunications Sciences
National Telecommunications and Information Administration

MR. UTLAUT: I am going to talk to you today about the ideas of three men from the last century who are having great influence upon the way modern society is developing, in particular the things that interest you in the information society—the ways that the developed world societies are refined nowadays. I might just indicate that these three men all had a commonality from the last decade: all of their names began with the letter "B". You might jump to a conclusion, if you do not think about which century this is, that I might be talking about Bach, Brahms, and Beethoven. That might be a very interesting thing, and certainly I think it is perhaps well recognized that music is one of the most pleasurable forms of communication. Nevertheless, I am not going to be talking about those three B's. I will give you a hint. One of them is Bell, which I believe you anticipated.

It was suggested to me, since the National Telecommunications and Information Administration (NTIA) is not everybody's household word, that I might describe for you a bit about NTIA and some other things before I get into discussing the ideas of these three men. The NTIA is in the Department of Commerce. It is a fairly small organization, headed by an Assistant Secretary of Commerce, and it has a number of functions. Its mandate is to:

- Serve as principal advisor to the President on telecommunications policy.
- Develop and set forth telecommunications and information policy.
- Coordinate federal telecommunications activities.
- Manage federal radio spectrum use.
- Conduct engineering and policy research.
- Give grants for public telecommunications facilities planning and construction.

Let me point out that perhaps the first and the most important mandate to NTIA is one delegated by the President: that it serves as the principal advisor in the Executive Branch. It serves as the principal advisor to the President on all matters of telecommunications, whether they are domestic or international issues, and whether they deal with other aspects of government telecommunications.

One of the things NTIA does is develop and articulate the Executive Branch attitudes on telecommunication policy. This will illustrate a current one, with which you may not be familiar. You all probably know that there are international telecommunications satellites, the INTELSAT system, which handles a large body of communications on a worldwide basis. With the continuing desire for more and more communications, there are various companies in the United States proposing to put up additional satellites, particularly to provide communications across the North

Atlantic. According to the agreements that had been made in setting up INTELSAT, there is not supposed to be a drain from INTELSAT. This is the kind of thing considered in developing a policy which the President will eventually articulate—whether it is desirable, in the interest of national security and with regard to competition and things such as that, that we have additional communications capability across the North Atlantic.

On the information side of policies, there are a number of issues. For example, we are involved in issues concerning copyright of intellectual properties. There is much concern about whether copyright covers software that computer programmers might develop, and whether it covers the design of masks for making semiconductor chips and things such as that. Other issues of concern are syndication of programs on television and questions concerning privacy of databases. These are some of the kinds of activities considered under information policy.

There are a number of activities that deal with coordinating many of the federal telecommunication activities. We work closely with other federal agencies in development of U.S. telecommunications facilities. We also participate extensively in developing U.S. positions and strategies for working in international organizations where telecommunication decisions are made regarding operation characteristics, tariffs, and so on. This interchange occurs in an organization that predates the United Nations, but which is now part of that body: the International Telecommunication Union, which is headquartered in Geneva. It is through that body that all of the firm agreements for telecommunications are developed, whether the communications medium is radio, wire line, or submarine cables, inasmuch as telecommunications is transnational.

We participate in conferences that develop the telecommunications structure. One of those within the past year that has had a big influence concerned a service that is called the direct broadcasting satellite service. It does not exist at the moment, but conceptually what is expected to happen eventually is that with a small antenna at your home, you will be able to receive satellite signals directly from a number of satellites, which in principal will be positioned at various locations. The concept at the present time would be to have something like four satellites serving essentially the various time zones of the United States. Developing positions for this gets to be very complex, because the geostationary orbit is really a finite extent. The part of the orbit where we can park satellites that are going to be useful for the United States exists between about 70 degrees west and about 140 degrees west. We have to share this with the Canadians; they are our good friends in the international arena. We have to share it with Mexico. But more importantly, we also have to share it with the South American and Central American countries. In total, there are something like 80 different regions that need to be served by satellites. An important part of developing strategies and the concepts here is how you can allocate orbit locations, how you can allocate a finite resource of a frequency band to provide this kind of service.

There are several companies in the United States that have authorization to launch satellites for direct broadcasting satellite service. I do not know that this is going to be highly important to librarians, but I would suggest that it is one alternative way of getting into the home. But, since all of our business is in transmitting information or communication in some way, this is one of the other possible alternatives that eventually could have some impact upon the way you do things.

Another important part of NTIA's function is to manage the use of the radio spectrum. In the United States, as distinct from most of the rest of the world, we use a free enterprise system for providing our telecommunication systems. Most of the rest of the world has what we call a Post, Telephone, and Telegraph organization (PTT)—a government organization that provides all of those services. In the United States, we divide the radio spectrum into services that are government and nongovernment. NTIA has the responsibility for managing all of the government frequency assignments and monitoring their use. The Federal Communications Commission (FCC), on the other hand, takes care of all of the nongovernment activities.

I thought that it might be desirable to illustrate. The word spectrum, a radio spectrum, does not necessarily mean much to people in general. What the radio spectrum amounts to is a range of frequencies, actually nine orders of magnitude, going from the lowest frequency and long wavelength up to exceedingly short millimeter wavelengths and very high frequencies. The International Radio Spectrum is allocated from three kilohertz, up to 300 gigahertz, three hundred billion cycles per second. AM broadcasting occurs in the medium range, the VHF and UHF television, and so on. The direct broadcasting satellite will be operating at the 11 megahertz band in the super high frequencies. Much of the satellite communications exist at the upper frequency end of the radio spectrum. All of the things one thinks of in radio communications, whether it is long-distance navigation, radar systems, mobile communication systems, whether it is aeronautical or maritime, all of the satellite communications and other things are allocated by service to certain bands in the spectrum.

Part of the reason different services are allocated to different frequencies is that the propagation of radio waves is very dependent on the environment in which they are propagated. The radio waves are very much influenced by the electrical properties of the earth, for example, as well as the electrical properties of the upper atmosphere, where the sun causes ionization of the atmosphere. If we are talking about the higher frequencies, those that propagate a shorter distance, they are very much influenced by atmospheric properties, the gases of the atmosphere, as well as the water particles that exist in the atmosphere. One of the difficulties with satellite communications, of course, is when we get to the higher frequencies, there is a limited altitude angle where one can view the satellite. More importantly, since so much of the path goes through the lower atmosphere where rain or snow or other matters can cause a continuation of the radio wave, all these have to be considered in developing these kinds of systems.

Let me turn now to the environment that you are finding telecommunications in and some of the reasons why we are there. I do not intend to discuss this to great extent. Hugh mentioned the dismal place which we are in. Some people describe it as utter chaos. It perhaps is not as bad as all that. There is a tremendous driving force behind telecommunications, the fact that all of you are using it so much. Let me illustrate some of the kinds of activity.

Figure 1 is a plot with time showing the revenues just for communications across the Atlantic. There are two aspects here: telephone, in the white portion of the bar, and record service, in the black portion. A few key points may be noted here. About 1956, the first transatlantic ocean cable was put in to carry telephone service. You see, things were going fairly constant at that time. All of the telephone service across the North Atlantic preceding that, of course, had to be done by radio circuits, so you had radio telephone. Around 1965, the first satellite

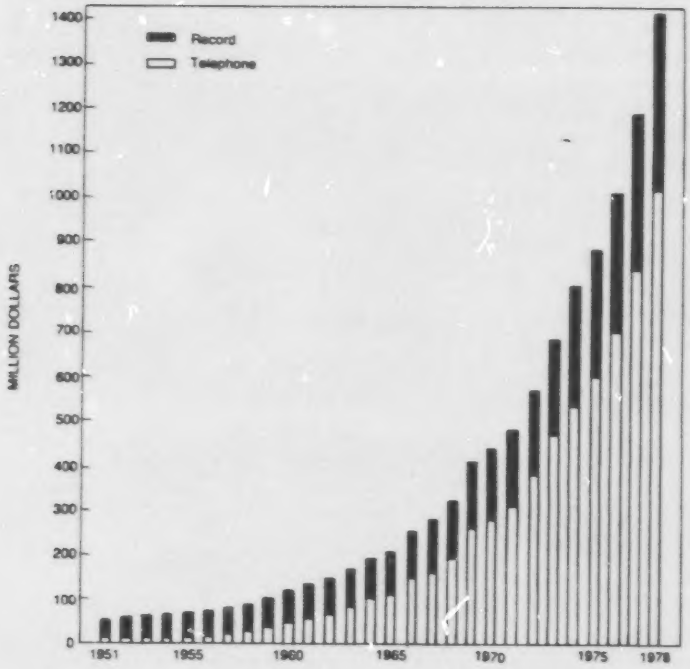


Figure 1

service across the North Atlantic for telephone service began. In about 1970, there was the first automatic dialing across the North Atlantic. The rate at which telecommunications across the North Atlantic has grown is increasing rapidly. In 1982, there was something approaching three billion dollars in increasing revenues across the North Atlantic. It is symptomatic of the tremendous growth that exists in telecommunications.

Telecommunications itself, as you can see by comparing various industries in figure 2, is the area that has the greatest growth rate over the last couple of decades. If you take the total sum of all the new jobs that have been created in the United States, you could attribute it to communications. It is a very, very large impact. It is at the present time—well, at the time this curve was drawn and with the most recent figures—the third largest contributor to gross national product in trade.

Communications—including telecommunications and equipments and services—is one of the few things in which there is a positive balance of trade with the United States. It has the greatest productivity increase. Figure 3 gives an idea of the market size for equipment in various parts of the world. You can see that something approaching 50 billion dollars of telecommunications equipment is being traded at the present time. That is expected, with some of the things that I will be talking about, to grow to 60 to 80 billion dollars of trade. This is one of the reasons that there has been consideration of a Department of Trade in the United States, transferring the Department of Commerce to a Department of Trade, of which

telecommunications would be one of the major elements in that part of the trade issue.

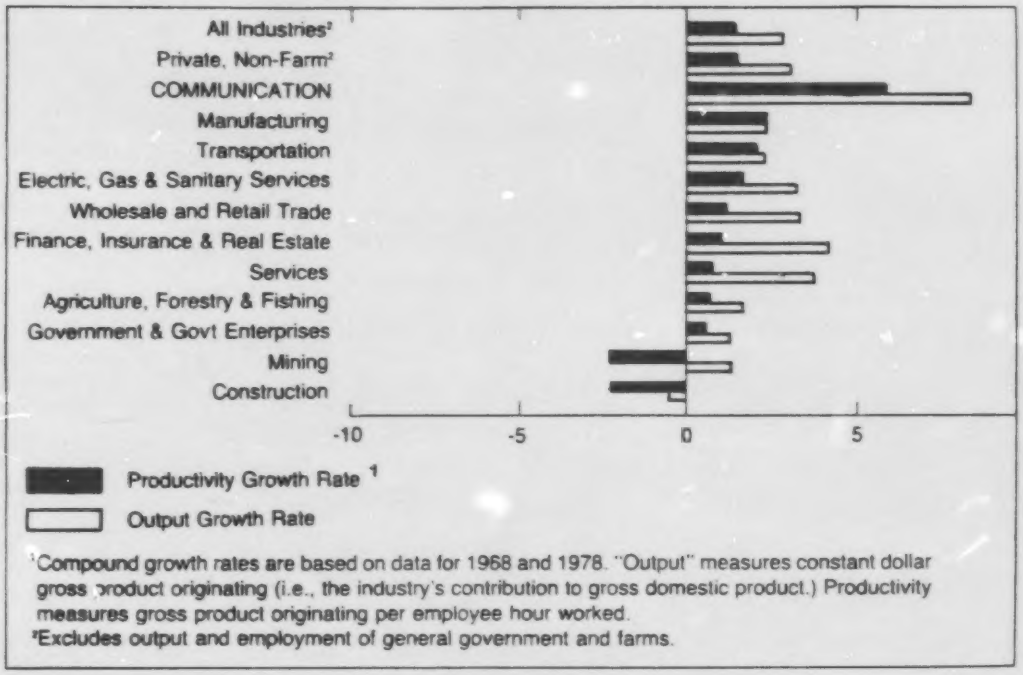

All Industries²
Private, Non-Farm²
COMMUNICATION
Manufacturing
Transportation
Electric, Gas & Sanitary Services
Wholesale and Retail Trade
Finance, Insurance & Real Estate
Services
Agriculture, Forestry & Fishing
Government & Govt Enterprises
Mining
Construction
-10
-5
0
5
Productivity Growth Rate ¹
Output Growth Rate
¹Compound growth rates are based on data for 1968 and 1978. "Output" measures constant dollar gross product originating (i.e., the industry's contribution to gross domestic product.) Productivity measures gross product originating per employee hour worked.
²Excludes output and employment of general government and farms.

Figure 2

If you have not been convinced that we have moved into an information age, it is illustrated in this plot (figure 4) of different kinds of services going back into the 1880's. Obviously, back in the 1880's, agriculture was the big industry. Some of the other hard industries are shown. If you notice the service industries and, in particular, the dotted line of the information industry, that, I believe, is some confirmation that we truly are becoming the information society that many people have talked about. For many of us, when we go to work, our job is essentially one of solving problems, either problems of our own or problems that other people have; and the way that we solve these problems to a large extent depends upon information transfer.

This is where I want to come back to the three B's. If we go back into the last century—the inventor of the telephone is pretty well known: Alexander Graham Bell. I expect the name Charles Babbage is not too well known, yet it was Babbage who essentially started the development of the first calculator. He developed what was called a difference engine at that time. He wanted to be able to add and subtract and multiply—things that would help out in the office environment. At that time, machinists just did not have the capability to produce quality mechanical devices for calculating. Some of the industry worked on this up until the 1940's when the electrical/mechanical calculator was capable of multiplying 23-digit numbers. That was big at that time. Of course, since then, there has been the

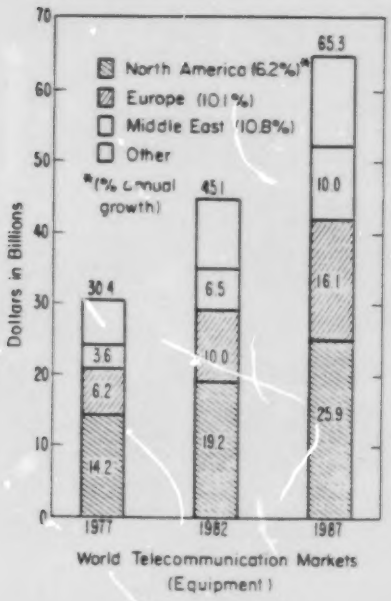


Figure 3

advent of the electronic calculator. A third important person who made an impact on us was William Burt, who developed the first typewriter.

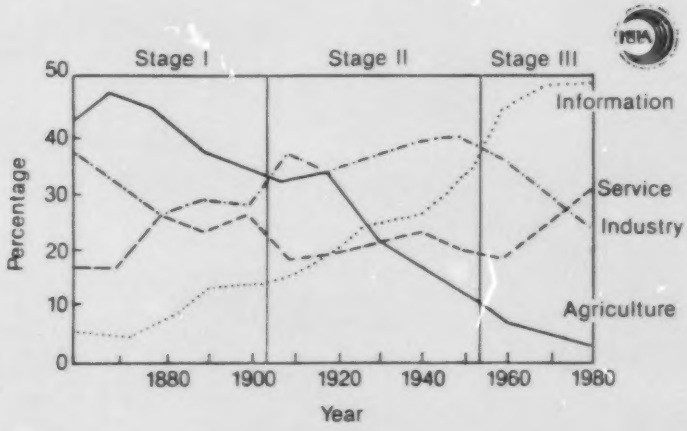


Figure 4

Let's take a look at those basic inventions and some of the modern things that are added on. First of all, we have added software to all of these things: the telephone, the calculator, and the typewriter. A second element that has been induced into this industry has been semiconductors, and that is making a tremendous difference. Figure 5 indicates several things: it is a plot that is a function of year, and it also shows the number of components that can go on a semiconductor chip.

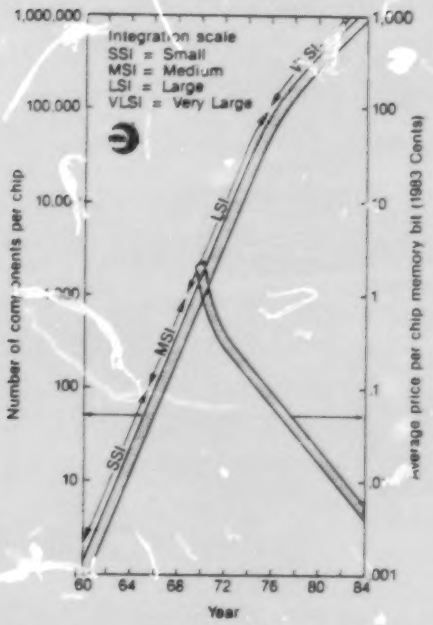


Figure 5

You note that the number of components per chip has been growing at a very rapid rate. At the same time, the curve representing the unit cost per chip memory bit is dropping very rapidly. That is why many of you who have digital watches, portable calculators, transistor radios, and so on—because that cost has come down so rapidly. This has had a tremendous influence upon all of these equipments. The fact that the cost of semiconductors is coming down also means that the cost of communications is dropping very rapidly per unit of communication. The same is true with the amount of computation that one can do in the unit time. Of course, the amount of information that can be processed in a given amount of time is increasing rapidly.

I intentionally did not start at the top (see figure 6) and talk about digital technology, because this is an area where I want to get slightly technical. I will try to keep it really at a low level so that I can communicate to you what digital technology is doing to influence substantially the computer at the present time; the same with the word processor, which is having a very pronounced influence upon the telecommunications network.

Let me try to lead you in from what is described as analog communications (see figure 7). If we take a simplified picture of you at a telephone—a source and a receiver—you know that there is a carbon microphone that is caused to move by the atmospheric pressure change from your speech. Running an electrical current through the microphone then causes a variation in that electrical current. That time variation in the electrical current, then, is the analog of your voice sound. Essentially, that is a signal that varies in amplitude in time. It goes through an analog system, comes out the receiving end, and that changing electrical signal then causes the diaphragm in the ear piece to vibrate so that you think you are directly

TELECOMMUNICATIONS	DATA PROCESSING	OFFICE EQUIPMENT
(Alexander Graham Bell)	(Charles Babbage)	(William Burt)
Telephone	Calculator	Typewriter
+ Digutal Technology	+ Digital Technology	+ Digital Technology
+Semiconductors	+ Semiconductors	+ Semiconductors
+Software	+ Software	+ Software
= Digital Transmission	= Computer	= Word Processor

Figure 6

hearing the words of the individual who spoke. That is what we mean by an analog form of communication. It is an analog of the original signal. There are many other examples that could illustrate this principle.

If we wanted to communicate by a digital means, however, I have to remind you that there is a fundamental principle in mathematics that says that a cyclic wave form can be dissected into its components, which is made up of a number of sinusoidal wave forms. A sinusoid is a nice smooth wave. It also turns out that it is possible, then, again through another fundamental theory, that if you know two positions—two points on the sine wave—you have defined that sine wave in completeness. There is only one sine wave you can draw through those two points. If you apply that kind of reasoning, and go back to our analog signal, and if you take the human voice as transmitted over a telephone line, we only use up to four kilohertz of that voice signal. So, it is possible, since we need two points to identify the highest frequency in the voice band, if we sample the analog signal as a rate that is equal to twice the highest frequency—this will be eight kilohertz in this case—then we would have part of the conversion from an analog to a digital signal. The other thing, of course, is that we must somehow, because of the different amplitudes being sampled all the time, have some sort of coding mechanism to express that. It is possible it is done this way with the telephone signal, for example,

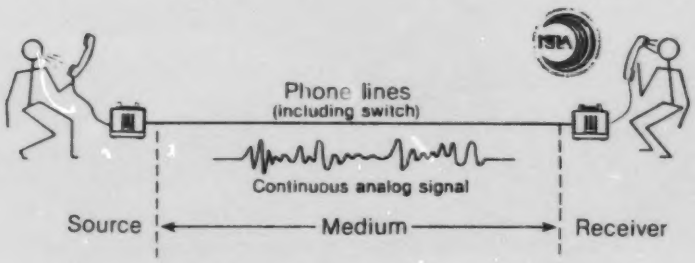


Figure 7

with digital signals. Essentially, what we are talking about is the selection of one of two equal choices. We will send either a "yes" or a "no" or a "one" or a "zero"—which is the more conventional way of describing this.

The original signals used in communication really were digital. If you think of the Indian transmission of smoke signals, that is a digital signal. Either the smoke puff was there or it was not there. Paul Revere, with his "one if by land, two if by sea," illustrated a digital signal. If you take the original telegraph with the Morse Code—dots and dashes—that is a digital signal. That is what we are trying to move forward to—from the analog into the digital (see figure 8). So that by sampling that and coding it, we can come out with the digital signal and pass it through a digital line. At the other end, it has to be decoded and converted back to the analog signal—or the telephone signal, if you wish.

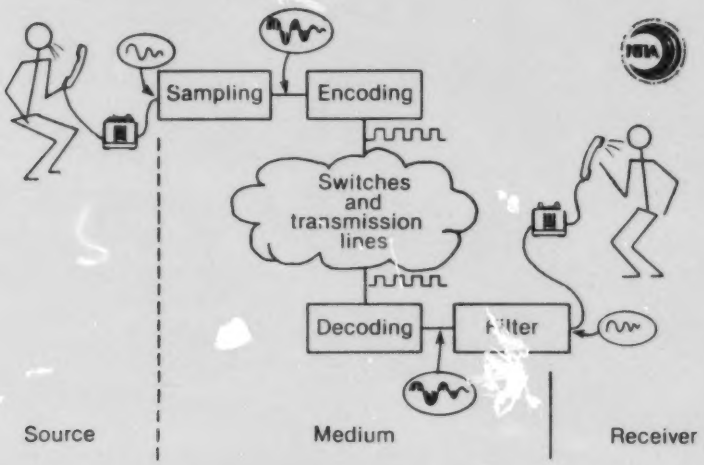


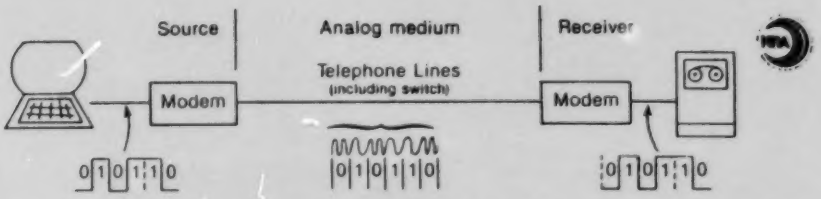
Figure 8

What do we do if we have analog lines but we have the digital system to start with? The natural language of the computer is a digital signal. What we have to do is take these digital points—the zero and the one—and somehow convert them into a continuous wave. There are various ways of doing that. The signal goes through a device, which probably many of you have: a modem. This is an abbreviation for a modulator and demodulator. It causes the one to transmit a frequency, the zero to transmit a second frequency. It is possible to go from digital sources, through a modem to a digital transmission line, through a modem and back to a digital line. The lower part of figure 9 is the reverse, showing the analog signal going through a codec (coder/decoder) into the digital analog.

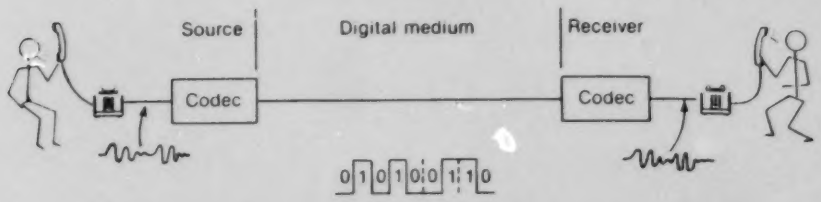
What does that all add up to? It says that we can mix analog and digital sources and feed them into analog or digital sources. There are various ways of doing that; and again, I will try to simplify so you can understand a bit more what is going on in the network (see figure 10).

One of the things that, of course, you are interested in is being able to talk to someone at a distant location. You do this through different switching mechanisms.

One of the possible ways of switching is the one that you use most frequently, though you may not realize it. This is the so-called circuit switch, in which you, as a subscriber on a long-distance call, may go through a number of switching stations; and when you go off hook here, the first central station will send a signal back to you, a dial tone, into which you feed that information. At the far end, if the receiver is taken off the hook again, the whole network dedicates this circuit to you continuously. That is the circuit switch arrangement. It has advantages. First of all, you have the circuit all the time. To the network provider, though, it is a disadvantage, as it is tying up the network resource continually.



(a) Modem conversion of digital signals for transmission on analog channels.



(b) Codec conversion of analog signals for transmission on digital channels.

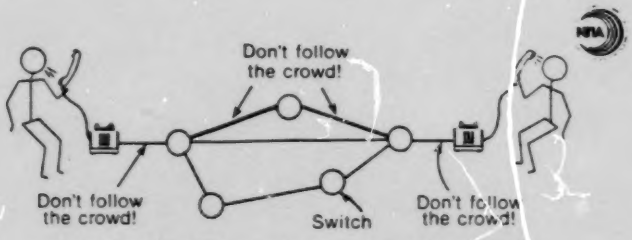
Figure 9

One of the things about voice communications, of course, is that probably only 40 percent of the time are you using this circuit for the typical speech and the transfer from one end to the other. You say something; there is a time before the person respond. It is not making the most use of the network resources.

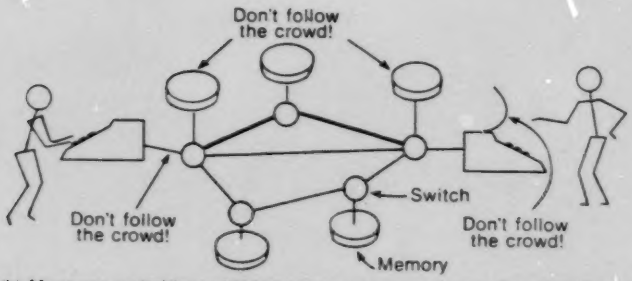
Another possible way of switching is by a store-and-forward situation. This is done with telegrams, for example, in which the message you have goes to a storage. Then when the circuit is opened to the next path, that message is retransmitted. It can be restored, stored, and retransmitted. There is the message switching.

The newest form is packet switching. In essence, this is very applicable to "bursty" type information, whether it is voice or, more particularly, interactive computer. If you think of using electronic mail or anything in which you are making use of a computer, there is a large amount of waste time when there is no communication going on. The principle here is to take the information and put it in small packets; it is somewhat analogous. You can think if we have this same message, "don't follow the crowd," you could write "don't," put it in an envelope, and put it in the mail to go through the postal service. If you have addressed it

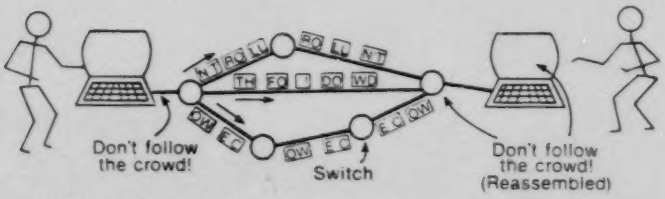
correctly, it will go to the receiver. Write the word "follow" and mail it in another envelope, another packet, and get it there, at the far end. Then you can reassemble these according to numbers. Essentially, not only can you make use of the network, but all of the other people that have packets of information can be sequenced in here. In the digital form, inasmuch as the message going through the network is made up of ones and zeros, it turns out the network does not really care what the source of information is.



(a) Circuit switching with dedicated physical path.



(b) Message switching with temporary memory storage for complete message relay.



(c) Packet switching with limited size message packets.

Figure 10

One of the advantages of digital information is that, first of all, in any long-distance communication there is always the possibility of destroying the signal content due to noise or other interference sources. With digital communication, it is possible at periodic intervals to detect whether it was a one or a zero and reconstitute that one and zero so that you start sending a clear signal, so that noise does not accumulate over long distances as it does in an analog. There are other advantages at certain distances and procedures in switching networks, particularly

since they are under the control of computers. In the long run, digital communications will be the most dominant means of transferring information.

Let me summarize. In a sense, there are large forms of communications, whether it is computers or word processors or any other kind of equipment you may have that has a computer terminal (the telephone itself) all that is desired to go through a network. That suggested to many people it would be very nice to develop what is known now as the Integrated Services Digital Network. This will be the next generation, and it is coming pretty fast. Probably within a decade it will be prevalent on a worldwide basis. Within a matter of a year or so, you will see elements of this Integrated Services Digital Network that are already occurring. In essence, you as a user can have a variety of instruments at your beck and call in your office space, whether it is a telephone, a telex machine, or videotex machine, whether you are going into data or video messages. If we put these all in digital form, then it makes sense to send the information into the network in a digital form and have a digital switch. If you do that, this is the concept: regardless of what kind of information source you have on the customer premises, you can think of sending that into a digital pipe, which is of varying bandwidth. In essence, when you dial up for the service—the kind of service you want—that information will go along so the network will provide you in essence with the proper amount of bandwidth. The amount of bandwidth you need depends on the rate at which you are transmitting information. The faster and the more information you send per unit of time, the wider the bandwidth needed. There is a whole hierarchy here. Essentially, you access this service center, which can put in a packet network or a circuit switch, or to a database or an information base someplace—all kinds of alarm bureaus, any other thing that you can think of, other networks that may exist there. So this is ISDN, the Integrated Services Digital Network that is coming.

Figure 11 illustrates again the statement I made about the great differences in bandwidth. If you take something like an alarm or a monitoring system, the amount of information that needs to be communicated in a particular amount of time is relatively small and can be done at a slow information rate. As we move up, if you take digital voice, the sampling that I mentioned at 8,000 times a second and code it at 256 levels, which is two to the eighth power, you need something like 64 kilohertz per second to transmit digital voice. That is where this comes from. If you are going to transmit video, it takes a very large number of bits at a high rate. But in principle, all of these things can be fed into the network. The work that is going on at the present time is developing the standards by which this network will come together. It will evolve out of the world's present telephone network. Some of those same facilities will be used. What it should allow you to do, though, at your home terminal or office terminal, is to enhance the productivity that you have and the ready accessibility to telecommunications.

The standards that are being developed attempt to put together the possibility that different types of equipment will be able to communicate with each other. One of the difficulties, which I expect you all have run into in procuring equipment, whether it is computers or word processors or what not, is that if you get it from Company A, it probably cannot communicate with Company B's equipment. There is a process for developing standards known as the Open Systems Interconnection Standard. In principle, what that does is try to break up a number of logical actions so that a piece of equipment over here at A, through protocols, essentially recalls or combines all the information together.

Information will be put in digital form in frames. There will be flags to identify

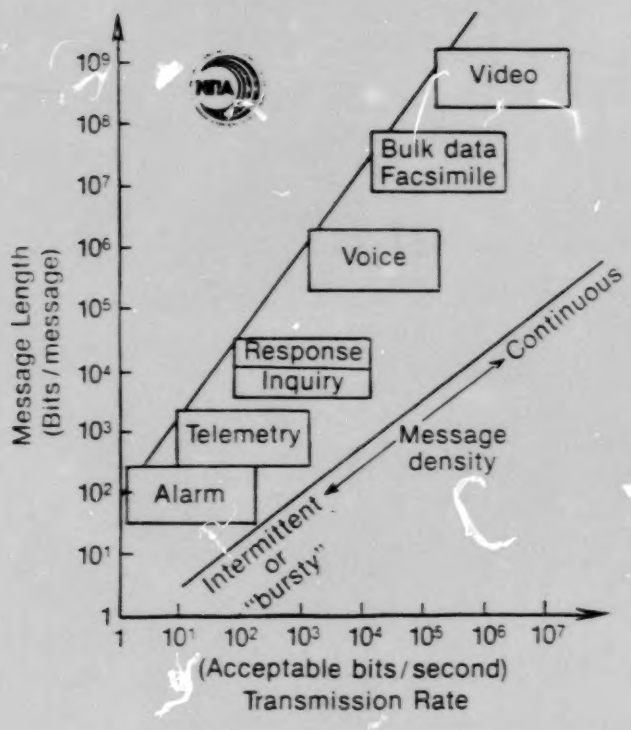


Figure 11

the beginning and end of the frames. There will have to be an address. You may, from your office, want to be communicating simultaneously with several different places, one by phone, one by computer, etc., with all of this information coming into this digital pipe, and there are certain headers that go along. Each of these layers will strip off certain amounts of information so you finally get your end device communicating with the other end device, whether it is made by the same manufacturer or not. This is really important for this kind of system to work this way, so that there will be that kind of standardization. Eventually, then, what one ends up with is illustrated by figure 12 in which all of the networks can be interconnected—all of the terminals that have a common communication—going through the worldwide network providing this kind of Integrated Services Digital Network.

One of the things that I would like to spend just a moment talking about is a videotex. If you do not know about it, this is something that may be very important to librarians, as well as many other people.

In principle, videotex allows you to enter any kind of database. Of course, with the integrated service, the digital network will be there. Whether it becomes a viable service or not is still open to question. There have been experiments that have been run in Europe and Canada. Canadian librarians, I expect, can tell you a lot about how they have made use of this for title searches, interlibrary loans, and similar activities. This kind of capability has been available for many years, but it is a question of whether it is going to be attractive enough that people will really

buy it and the systems will become available. There is one experimental system in the United States, which is in operation in Florida. This is sponsored by the Knight-Ridder newspaper and AT&T. They are trying to get statistics on how much the public will make use of this and what kind of activities it will do. That particular service has a very simple videotex terminal. If you take the average person on the street, particularly of the older age group, they are not familiar and comfortable with computer terminals, and so they will light one button or lead through a process to make use of that.

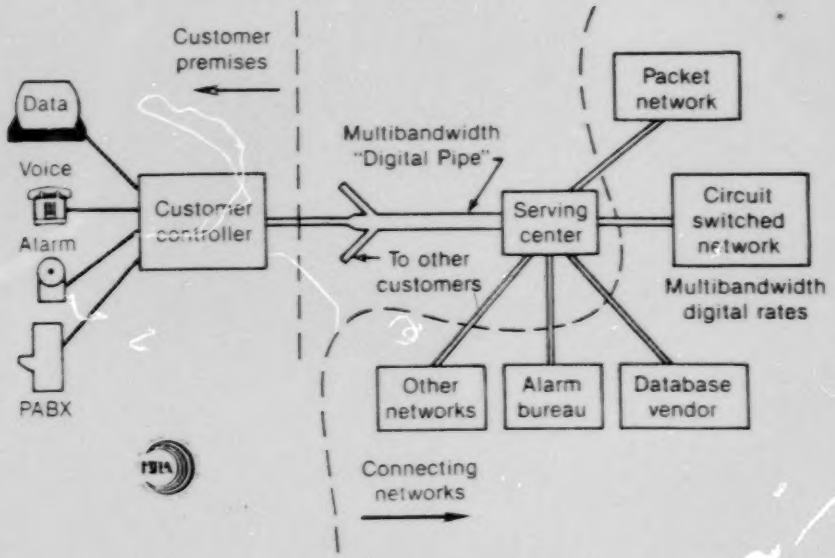


Figure 12

Recently, you may know, Sears Roebuck, IBM, and CBS made a joint agreement to develop a video technical service; but this will be based on computer terminals. There is a question of whether that is going to be acceptable at an early stage. Certainly, for people who are using computer terminals, it will be acceptable. It is going to be interesting to see which, if either of these approaches, is going to provide a viable communication capability.

Many of these other things, many of these ideas, are not new whatsoever. They have been described in the past year as "blue sky." Part of the problem is convincing the public that they really want to invest their money and use something that is there. It is hard to say "yeah, I want this" when I really do not know what this is or how much it is going to cost.

All of these things, including the Integrated Service Digital Network, are most likely going to come partly because of the occurrence I showed you before, the tremendous amount of worldwide communications, whether for insurance, recreation, transportation, banking—all sorts of information services. That kind of interaction seems to be so essential for modern society that it will grow. What its eventual impact will be on society and particularly in your business of information exchanges is yet to be seen. You are certainly aware there is so much flexibility

now, and for people who are not totally understanding in the telecommunication game, I think, as Hugh indicated before, it is really dismal and chaotic.

The problem is trying to sort out all of this and make use of the flexibilities that are going to be available to you. While it may look very chaotic, I think the future really holds a lot of promise, though, because we are such a communicating animal that the technology is not the thing that is going to drive this. It is not new technology. The technology all exists. It is going to be the kinds of demands that you and I want to place on the system.

STRUCTURE OF THE PRESENT TELECOMMUNICATIONS NETWORK

Donald J. Muccino
OCLC, Inc.

MR. ATKINSON: Donald Muccino, the director of the Operations Division of OCLC, is our next speaker. He is going to speak on the structure of the present telecommunications network.

MR. MUCCINO: When Hugh asked me to speak, I was flattered. I thought I better come up what a little anecdote or joke that was relevant to what I was going to talk about, but I could not. I thought there were some cheap shots I could take at AT&T. For example, a new slogan: Reach out and crush someone. Or; How do you know when your AT&T account representative is lying to you? His lips are moving.

I did come up with a joke, though it has nothing to do with what I am going to talk about. This guy goes in a bar—one of those bars on the 90th floor of a skyscraper. He is sitting there, looking out the window, having a couple of diet pops. The guy next to him gets up on the table, opens the window, and jumps out, and about 30 seconds later, comes back in. The first guy looks at his drink and looks over at the other guy and says, "Okay." Twenty minutes later, the second guy opens the window and steps out again; 30 seconds later, he is back in.

After the second time, the first guy walks over and says, "Hey, did you just go outside?" The second guy says, "Yeah." The first guy says, "Did you just come back in?" "Yeah." "How did you do it?" "Simple physics. On these tall skyscrapers, there is a current that goes around the outside of the building. When you step out, it pulls you around the outside to get back to the inside. It is like a vacuum pulling you back in." The first guy says, "I don't believe that." So the second guy says, "Watch, I'll do it again." He jumps out and comes right back in. The first guy says, "That's pretty good." The second guy replies, "As a matter of fact, you will come back faster because you weigh less." So the first guy says, "All right. I'll try it." He opens the window and, of course, he goes 90 stories straight down, splat on the sidewalk. The bartender says, "You know, Superman, you sure are a mean drunk."

I would like to present a picture of the environment of the future (see Figure 1). There are many building blocks in that environment. Deregulation, technology—all these things are interacting with each other and are causing a pretty chaotic environment for us right now. This morning, I would like to focus on the divestiture, FCC, AT&T, and the recent tariff filings, and try to give you some understanding of what is happening to networks like OCLC and other people in the industry.

The divestiture establishes exchanges, which will be the purview of the Bell Operating Companies, and it establishes equal access. There is a lot of talk about access. Equal access in the voice world means that when you pick up your phone to dial your ten-digit number, you can select your carrier of choice. Right now you have to dial about 17 numbers to get into the Sprint or MCI system. Equal access would allow you to be able to select your long-distance carrier, so that when you dial ten digits, you will automatically be routed through the equipment of your choice. If you want to dial through an alternative carrier, you would have to dial another set of digits.

Figure 1

AT&T, out of the divestiture, gets the interexchange service. In other words, they can go between the Bell Operating Companies and independent jurisdiction interexchange. They also have the customer-provided equipment. The Bell phone stores became AT&T phone stores as of January 1, 1984, and are the ones now selling telephones, modems, etc. They are responsible for customer-provided equipment since January 1, and that is handled by AT&T Technologies and AT&T Information Systems.

AT&T will also be responsible for enhanced services. Some of these include software defined networks. Bill Utlaut was talking about some of the new enhanced digital and satellite services that will come under AT&T jurisdiction. AT&T retained the manufacturing arm; we know it as Western Electric. The R&D function, which is the only function that retained the Bell name, is now AT&T Bell labs. The Bell Operating Companies got the exchange services for the local loop functions and the local access. They are going to provide access to the other interexchange carriers. They have new customer-provided services, which are different from the equipment, and they retain the yellow pages. (The yellow pages were fought over; they are a big revenue generator.)

So with that basic background, let us start to look at how the Bell companies are organized. Figure 2 shows the seven Bell regions. They represent the seven holding companies that now own the 22 Bell Operating Companies. They are organized into regions, i.e. their jurisdictions to do business.

To take it to the state level, each state is divided by a number of Local Area Transportation Arrangements (LATAs; see Figure 3). For example, in Ohio, the number two LATA, which is Columbus, is the jurisdiction of Ohio Bell, which is owned by AMERITECH. So providing service within the intra-LATA service—within LATA number two—is still the Bell Operating Company: Ohio Bell, Columbus. If you want to provide service between LATA two and LATA one, e.g., between Akron and Columbus, you would go to a long-distance interexchange carrier, such as AT&T

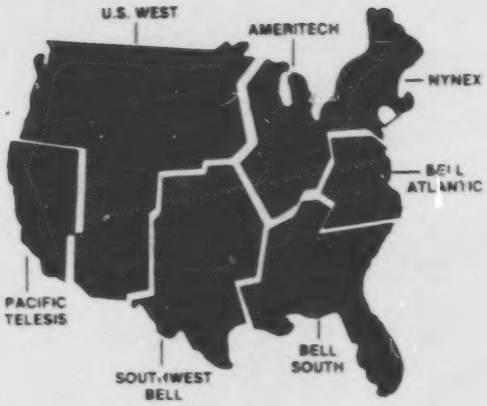


Figure 2

or MCI (See Figure 4). You would use Ohio Bell in Columbus and Ohio Bell in Akron, but you must use an interexchange carrier to connect the two. Now you have three players in the game. It works the same way outside the LATA. If you wanted to provide service from number two in the shaded area of Figure 3 to an area outside, you would have to go again to Ohio Bell in Columbus, the interexchange carrier, and then the independent carrier that is tariffed to do business where you are going.

Ohio Bell LATA's

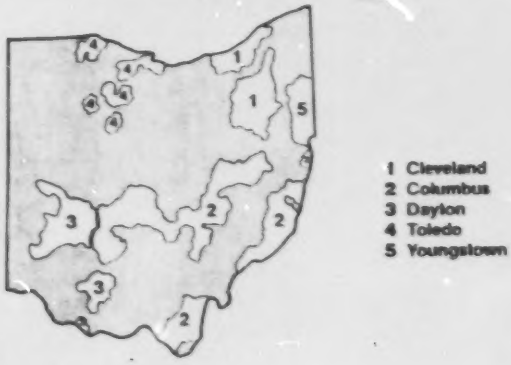


Figure 3

The structure is very complicated, and all aspects of ordering, service, and maintenance will become more complicated. Broken down piece by piece, the regions are divided into LATAs; within the LATAs, you have a number of different players. Between the LATAs, of course, are long distance carriers such as AT&T, MCI, etc. They are the interoffice channel, the interexchange service. The long-distance lines come into the LATA through a Serving Office (SO), which is

PROPOSED AT&T PRIVATE LINE TARIFF STRUCTURE

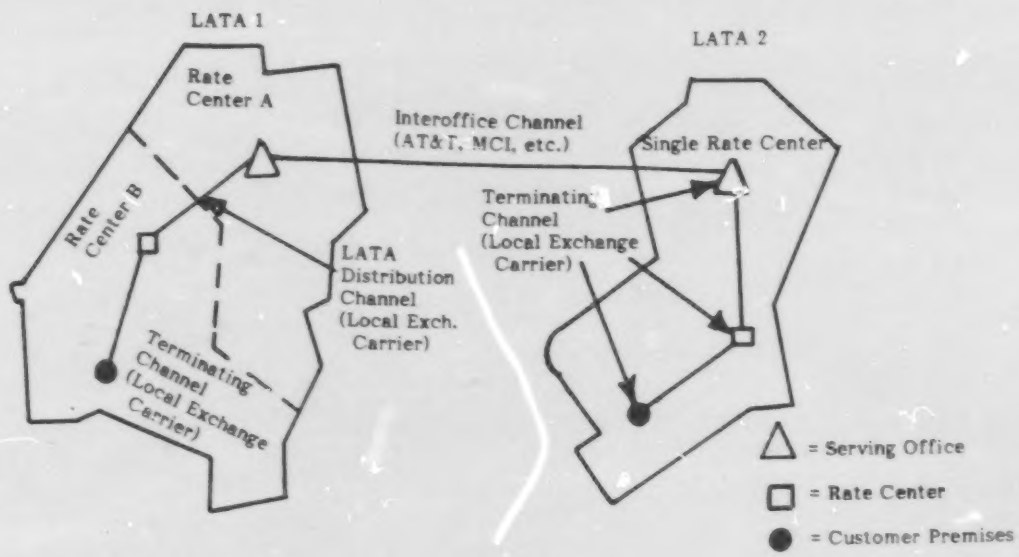


Figure 4

owned and operated by AT&T. These SOs are the gateways into the LATA from another LATA, and, in turn, are converted to the local wire office, which is operated by the Bell Operating Company or the Independent, and finally out to the customer premises, or the Terminating Channel (TC). This structure is supported by the tariff. The physical action and structural changes ordered by the Justice Department had to be supported by the tariff, and the tariff would allow the different charging mechanisms for compensation to local companies, as well as the interexchange carriers. Figure 4 shows the proposed new private line tariff structure.

TYPICAL MULTI-DROP LINE
(Current Tariff)

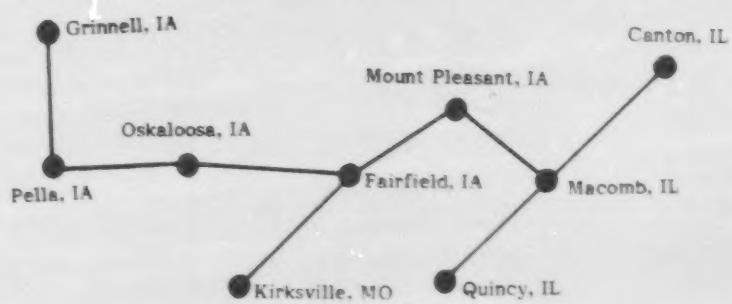


Figure 5

TYPICAL MULTI-DROP LINE
(Proposed Tariff)

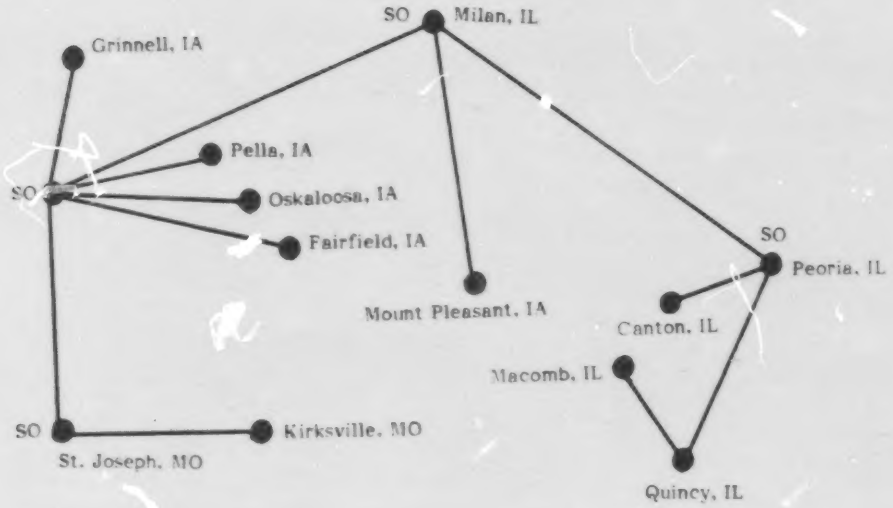


Figure 6

Figure 5 shows a typical multi-drop line under the current tariff structure, while Figure 6 shows a multi-drop line under the proposed structure. Previously (and still, until the new tariff structure goes into effect), there were two charges: the Terminating Channel charge for Station Termination, a fixed charge, and an interexchange charge, which was a variable charge. With the introduction of the LATA concept, there are a number of changes. There is one charge for interexchange or interoffice, and another charge for the Terminating Channel. And if a Rate Center (RC)—which is another little complicating factor they threw in at the end—is involved, there is also a LATA Distribution Charge (LDC). A Rate Center is nothing more than a number of exchanges put together. In Columbus there is a suburb called Dublin, in which OCLC happens to be located, that is a Rate Center. Columbus is also a Rate Center. The distance between the Dublin and the Columbus Rate Centers is 11 miles. We are levied $4.95 per mile to go into Columbus, across Rate Center boundaries. So, if the serving office for AT&T is in the same Rate Center as your location, you are not going to be charged that LATA Distribution Charge. But if you find yourself outside or into another Rate Center, you are going to pay $4.95 a mile to get from your Serving Office to your customer location. If this were not bad enough, the old fixed charge for this Station Termination (or terminating channel) was $36.05 a month. Now it is $103 a month, plus a $25 surcharge.

Under the old structure, you were charged the mileage on the circuit at a varying rate, and for each modem location, you were charged $36.05 a month. Under the new structure, depending on where the terminating channels are and in relation to your location where your modem drop is, you may or may not be paying the LATA Distribution Charge. AT&T is saying that the rates for long-range dropped by 10%. That is true; they could give it away, because they loaded up each end of the circuit. There are fixed charges at the Terminating Channel, the Service

Function, and the LATA distribution charges. That is all going to the local companies, and that is what is causing these increases.

The Service Function is something offered by AT&T. For $35 per month, they will take care of all that interaction with the Bell Operating Companies. In other words, you can sign a letter of agency with them for $35 per month per modem, and they will take care of your interaction with the local companies. You will not have to make those three phone calls to change any function. That is another $560 a month, if you have 14 modems.

Again, AT&T is doing nothing more than passing on the local charges in an averaged form to come up with these rates. This is what that practice did to some of our regional networks.

Changes in Telephone Bill After Tariff 840403

	Original Tariff		Without $25 Surcharge	
Network	% Change	$ Increase	% Change	$ Increase
AFLI	122	2,287	98	1,828
AMIGOS	58	37,465	45	29,146
BCR	57	19,193	44	14,830
CAPCON	138	5,293	106	4,053
FEDLINK	88	25,320	66	18,978
MLNC	79	6,220	61	4,798
NEBASE	70	3,497	56	2,760
NELINET	70	21,727	52	16,108
OCLCWEST	51	28,566	36	20,277
OHIONET	80	21,140	60	15,897
PALINET	80	20,112	48	14,301
PRLC	94	9,542	74	7,506
SOLINET	81	56,641	64	44,697
SUNY	85	28,205	66	21,928
WILS	81	8,249	64	6,493

The range of increase is about 48% to 122% (with $25 surcharge which was assessed for leaky circuits). A "leaky circuit" works like this. Let's say you have a PBX in California and a PBX in New York. You run a private line between them. In New York, you get a dial tone from a local PBX. You call out to California and say, "give me a local line." You just avoided paying any long-distance charges—that is a leaky circuit. In order to compensate the local companies for that leak onto the voice network, the FCC had levied a $25 surcharge per termination. OCLC petitioned the FCC to say that our circuits do not leak by their physical characteristics and by the nature of the network, and the FCC did come out with a ruling, which I will talk about later, that let us out of the $25.

If you stop to think about these rates and how they are structured, look at their proximity to Columbus. As you get father away, you start to take advantage more of that IOC, that long-distance break. In the more congested areas like CAPCON in

the Washington, D.C. area, you really get hit. None of the tariffs are very favorable. The lowest is 36. OCLC West, on the West Coast, has the most distance and takes the most advantage of the lower cost. But these figures are only the average. There are variations depending on particular configurations. The person with one terminal and one modem is going to get hit the worst. You cannot spread that high, new, fixed cost over a number of terminals as you can in a bigger institution. That small person out there in the middle of Iowa with one terminal and one modem is going to see about a 100% increase in their bill, and obviously no one can afford that.

AT&T, the Bell Operating Companies, and the National Exchange Carriers Association (NECA) filed their new tariffs on October 3, 1983, 90 days before the January 1, 1984 implementation. There was a great to-do over these tariffs. The Federal Communications Commission (FCC) immediately on October 18 delayed implementation of all the tariffs from the October 3 filings until April 3, 1984.

Now the House got into the act. They passed H.R. 4102, which would repeal access charges for residential customers and single-line businesses, by a 264-142 vote on November 10. In November, OCLC filed comments with the FCC, along with CAPCON, ALA, and everybody else, to get our opinions recorded on the access charge tariffs, and in December we filed again on the other tariffs. (Note: "access" is a broad term for the local charges, the LDC, the Terminating Channel, etc., that are hitting us so hard.)

On January 6, AT&T replied to all the commentors. On January 9, the FCC went back to them and asked for additional information regarding the comments specifically for libraries that were brought up by ALA, OCLC, and in the CAPCON filing, and verification of impacts cited in the comments. During the ALA Midwinter Meeting, representatives of ALA, OCLC, member libraries, and others went up to the Senate offices to discuss problems we were having and some of the effects from what is going on. Also in January, OCLC filed a petition with the FCC for waiver of the $25 surcharge for the leaky lines. In mid-January, AT&T contacted OCLC in response to the FCC's request to them for more information, asking us to verify the impact statements in the ALA and OCLC comments to the FCC—and, of course, the numbers were right.

On January 19, the FCC announced its intention to delay residential/one-line business access charges and clarified the surcharge for a private line. They made non-leaky lines not subject to the $25, and they also concurred with H.R. 4102, which eliminated the $2 surcharge for local customers and the $6 charge for single-line businesses. The FCC was getting pressure from Congress, and I believe they gave into it and made these changes to reestablish themselves as the group that deals with tariffs and rates.

In January, ALA was pivotal in providing Senator Pressler the information and the ammunition for a special amendment S.1660 to exempt libraries under the new tariff. AT&T actually started to hear us and on January 24, held a meeting in Washington for the "library market" to explain their position. Attenders included representatives from OCLC, the Library of Congress, the National Library of Medicine, ALA, the Research Libraries Information Network, the Washington Library Network, and CAPCON. On January 25, the FCC issued an order to delay residential/one-line business access charges and to remove the surcharge for non-leaky private lines. On January 26, the Senate tabled S.1660, in light of the FCC action on access charges.

On February 15, AT&T filed a new "illustrative tariff" for private lines: this is what it would be if they filed without the $25 surcharge and with minor adjustments to LDC. Crossing in the mail almost was the FCC decision on the exchange carrier tariffs for local loop, access, and nonrecurring charges. The NECA represents some 1500 local companies—not Bell Operating Companies—and the FCC request for additional clarification delayed the tariffs again. The FCC said that if NECA resubmitted them by March 15 they could make the April 3 deadline, which they did. But when NECA refiled the tariffs on March 15, the FCC said, "Hey, you changed all the rules." The FCC extended the effective date for the access charges filed by the NECA and the BOC until June 13, 1984. The Bell Operating Companies and other exchange carriers refiled tariffs on March 19. This is the ongoing story. Tune in every day for Lance and Lydia in Tariffland.

The significance of the Bell Operating Company tariff and the NECA tariffs is that the local charges that AT&T levies on us is nothing more than an averaging of all. They take a global look at all the charges, average them out, and come up with their exact figures—$78 for a terminating channel, $25 for the surcharge—and they levy those against their customers. All they are doing is passing on the charges they are paying to the Local Companies.

Followed right on the delay of the NECA on March 28, the FCC extended the effective date of the original AT&T filing, which was still active, to June 1, 1984. It would have gone in on April 3 had this action not taken place. So, who knows what is going to happen? I do not believe that the tariffs are going to take effect in June. The people at AT&T are working on redeveloping the old tariffs for some of the new services, and I do not believe they are very optimistic about a June implementation.

What all this means is there is a lot of turmoil and it is confusing. It certainly put some pressure on us at OCLC to start thinking about the way we do our networking. The old private line network was economic and still is. Terrestrial-bound multipoint lines served us well, and did a good job for us. The rules are changing, though, and so are the economies of operating a network like that. We came up with some short- and medium-term tactical objectives, which we hope will be our bridge into the future networking that Bill Utlaut was talking about, and reposition the network to take advantage of future direction in communication: digital transmission; standard protocol and interfaces; satellite or terrestrial facilities.

The OCLC network is a polled network. In other words, you send a poll out. You see the light light up. "You want to send something?" "Yes, I want to send something." A satellite network introduces a significant amount of delay. You are going to see response time increase if you go on a strictly satellite circuit. That is something of which we must be aware. Using standard protocols could help, such as the packet switch which was described, to overcome this problem.

We want to take advantage of virtual networking. Virtual networking is something AT&T is working on. It is a software network which is more or less like your plug on the wall. When you need service, you plug in your outlet. If you need more service, you plug in more plugs. AT&T will have the capacity through the Software Defined Network to provide that service. During your peak hours, you are using more and paying more. During your slow hours, you are using less and paying less.

We want to define short- and medium-term tasks to be employed to provide an evolutionary rather than revolutionary transition of the network and establish specific responsibilities for these tasks. Everybody thought it was a good idea to do something. We wanted to get it laid out and have people assigned to specific jobs. We broke the tasks down into three major categories:

Tariff and Tariff Avoidance:	These activities relate to actions that can be taken within or against the tariff structure and rates, e.g. FCC petitioning, services options, etc.
Technical Change:	This area includes projects undertaken in a technical vein to improve the way we now provide services, change the way we currently operate, and replace technologies contributing to our inflexibility, e.g. protocol conversion, communications processors, etc.
Policy and Procedural: Considerations	This area covers constraints on the network, artificial or real. One change might be for sophisticated customers to maintain their own networks while we maintain the main hookup.

There are a lot of considerations. What follows is my own view, not an OCLC product announcement. This is what the network looks like now (see Figure 7).

OCLC NETWORK PRESENT

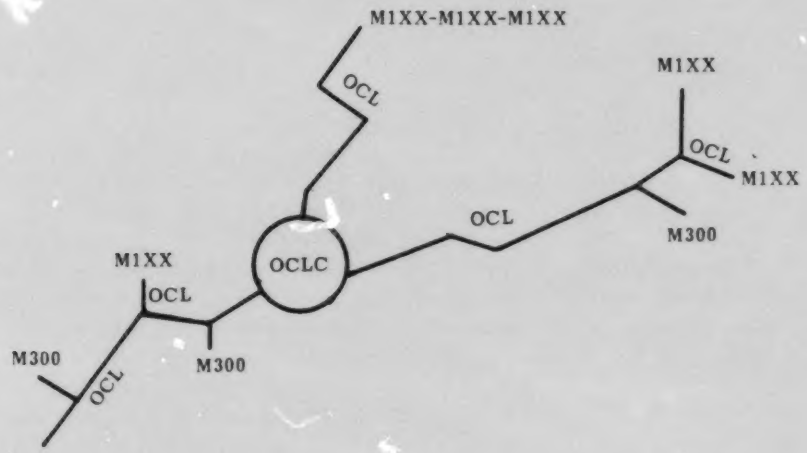


Figure 7

OCLC NETWORK + T_1

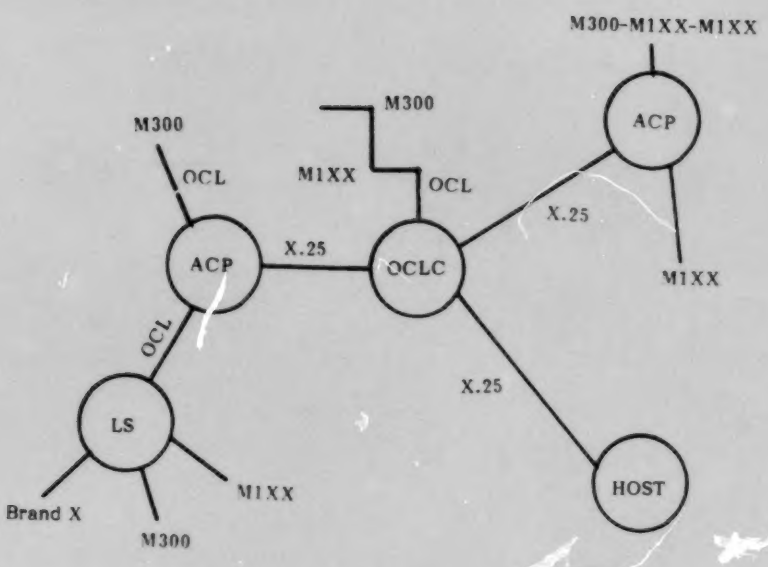


Figure 8

OCLC NETWORK + T_2

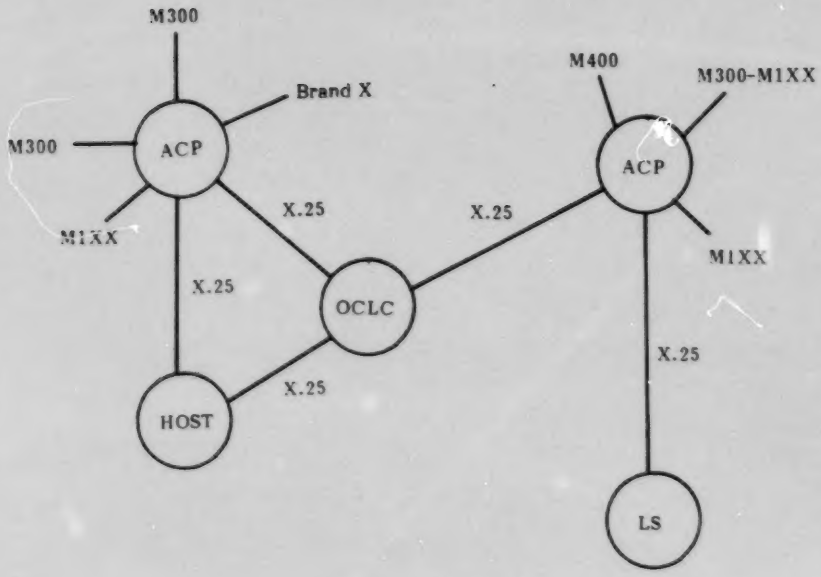


Figure 9

OCLC has the center of the hub running on OCLC protocol out to Model 110 and 105 terminals, chained and so forth. The next step would be to go towards an objective of some kind of advanced communication processor. The advanced communication processor would talk OCLC protocol out one side of its mouth and X.25, the packet switch protocol, out of the other side; so you could have configuration such as that shown in Figure 8. You could also have a straight OCLC protocol and more or less mix and match. You could have X.25 out to the communications processor, OCLC spoken to some local system and then the various terminals hanging off of that; and then since you are standard with the world, you could talk to maybe some other host to some kind of gateway.

The next extension of that would be something like Figure 9. (That M400 is not a product announcement; it is something I made up.) Again, you have a network, standard protocol on your main links. You are still supporting your terminal base, whether it be model 300 or 105 and so forth. You can now talk to local systems of a variety, or talking out here to Model 300 or another system talking X.25. You have improved your flexibility. You can take advantage of satellite facilities because of your X.25 packet switching. You can use digital transmission facilities mixed with the analog facilities.

In summary, many things are happening. The environment is confusing. I hope that some of the terms I have introduced to you today will help you read the newspaper—though the tariff delays seem to be old hat. Telecommunications is blurry right now and I have a lot of questions. Do you?

ALTERNATIVES TO THE BELL SYSTEM

C. Thomas Taylor
UNINET, Inc.

MR. ATKINSON: Our last speaker of the morning is C. Thomas Taylor. He is president of UNINET, which is based in Kansas City, and will make a presentation on the alternatives to Bell.

MR. TAYLOR: Just a few minutes ago at the break I was chatting with a woman from the group, whose name I will not mention at this time. She was asking me if I was a little bit nervous about making this talk. I said, "No, I'm not really nervous." She said, "Aren't you nervous speaking before so many people that you don't even know?" I said, "No, that's what I really enjoy doing and it's a very pleasant task to get acquainted with a lot of new people." She said, "Aren't you nervous to speak to such a large group of people? There must be 80 to 100 people there." I said, "No, I'm not nervous about speaking to that size of group. I've spoken to groups of thousands or more before." Then she asked me, "Are you a little nervous about speaking on such a technical subject?" At that point I started to wonder what the gist of these questions was. I said, "No, this is a subject or a field that I've worked in for many years and it's very exciting industry." Then I asked her, "Why do you ask me if I'm so nervous," and she said, "I am trying to figure out what you are doing in the ladies' restroom."

I would like to begin by telling you how happy I am to address this group on the topic of alternatives to Bell in communications. It is a topic that is not only very exciting, but near and dear to my heart, and one that I believe at this point in time is a very dynamic topic.

In order for you to have a better familiarity with UNINET, let me briefly tell you we are the third largest public data network in the country and have been in commercial service since 1981. Actually, we started in network services much earlier than that, in 1968, as part of United Information Services. TELENET and TYMNET are the other two public data networks.

UNINET is a wholly-owned subsidiary of United Telecommunications, which is the third largest telephone company in the country. United Telecom, our parent, is very actively establishing a position in the intercity marketplace that we have been talking about this morning. We have another company by the name of ISACOM, a video teleconferencing company based in Atlanta, with which some of you may be familiar. We are in the process of acquiring U.S. Telephone, which is a long distance reseller like MCI or Sprint, an OCC by FCC jargon. A few days ago we announced a major intercity network program where we are going to build a nationwide fiber optic network, which I can promise you will be a lower cost, high quality communication alternative to Bell.

We have heard a lot this morning about which way the costs have been headed in the short term. I will say that in my view, the expansion of competition in communications will bring about lower cost alternatives for communications.

As mentioned, the subject of this presentation is the Alternatives to Bell. I have chosen to focus my remarks in the data communications area. I believe that this is an area of great interest most appropriate for this audience. However, I

would attempt to answer questions, if you have any, on other parts of the communication area.

Dr. Utlaut and Don Muccino have given us some excellent background. It is amazing to me, almost shocking, how close the flow of their remarks present parallels what I want to present. You will note that I have a little different interpretation, one of being in the business of supplying a major packet service to this industry. One of the reasons that data communications is so exciting at this point in time is primarily because of the significant growth that is taking place in the marketplace.

What are the underlying factors for this growth? We have heard some of these this morning, but the first major factor causing growth is due to the fact that we are truly in the information age, certainly the post industrial society. The key conditions present in the industrial society are the development of multi-unit organizations that are typically widely dispersed geographically. In the past with the industrial revolution, we concentrated a lot of workers in one building or one location; that is not the case any more.

The other major force that is shaping the new economic unit is the strong influence or emergence of the knowledge worker. I believe this group certainly appreciates intimately the conditions affecting knowledge workers. Figure 1 shows the rapid change that is taking place in the labor force and the fact that the industrial occupations have been trending downward since about 1950, while service and information worker opportunities have been growing and filling that void.

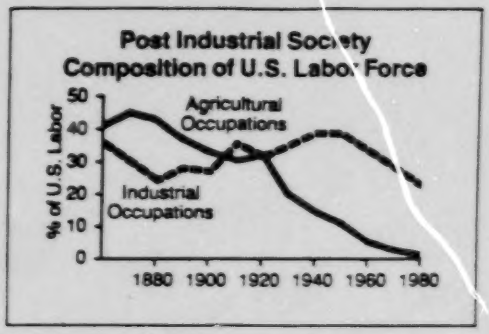


Figure 1

The information explosion—we are all touched by it. There is no way we can avoid it, I am convinced. Not that I would even want to, but it is a major factor with which I am sure you are all extremely familiar. The computer that contributed heavily to the massive amounts of information available today, is now being used, I believe, much more effectively to help us manage and retrieve that information in a meaningful way. The rapid expansion of online data bases. I am astounded, having been in this field for the last several years, at how it has now really started to accelerate. I believe it is a very positive effect. It certainly has the potential to greatly benefit professionals in every area.

Back in 1981 there was one device or intelligent piece of equipment for every ten professionals. That is now very rapidly going to be one for one, and the neglect

that has taken place in the automation of the knowledge worker or the professional work is now starting to change rapidly, thanks to such things as the microcomputer and the advances of Apple and IBM. I do not know if you have had the chance to see the Mackintosh. It is an amazing little machine—I am quite impressed. It is not that it is so powerful. It is that the Macintosh is so functionally useful for the large number of users. One message I want to make clear in my remarks. It is not the technology that is really driving all of these changes. It is the usefulness that is now being provided to the end user in ways that he can adapt to his past forms of behavior and make him more effective in doing his job.

We talked about which way costs have been going and technological advances this morning. Figure 2 illustrates some historical cost trends. I am not disputing Don Muccino's information in the least about costs increasing in certain areas. Communications costs, however, are trending downward on a per unit basis. There is a great increase in volume activity and with deregulation a lot of what I would call interim aberrations. The cost of computer power has come down dramatically.

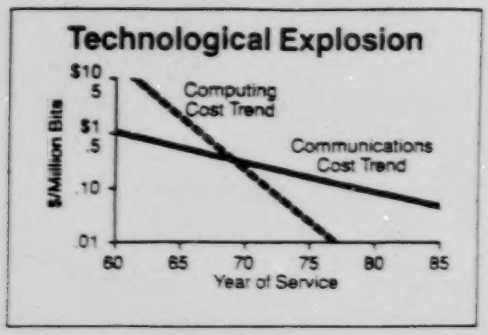


Figure 2

I would like to use a simple analogy of why I believe the telecommunications industry is the glamor industry of the '80s. For you history buffs, you can remember that the first automobile was introduced in 1895 or thereabouts, and the first 1,000,000 cars were sold in America by about 1920. In fact, it was Henry Ford and the mass assembly process that made that possible. Then it took about 30 years before the next 20,000,000 were sold, because it was first necessary to build a system of roads and highways on which to use these cars. From 1950 to 1970, the next 80,000,000 cars were sold; thus creating a need for a massive automobile services industry (see figure 3).

A similar thing is taking place now in the computer area (figure 4). We do not have to go back very far, though—only to 1970. The first 1,000,000 computers were sold by 1970. The next 9,000,000 were installed by 1980, during which time networks similar to the highways and roads were being put in place by which these computers could communicate with each other. By 1990, there will be a hundred million computers out there. This decade will mark a massive growth in the services portion of the computer industry, which includes everything from enhanced network services to information services to software services and much more.

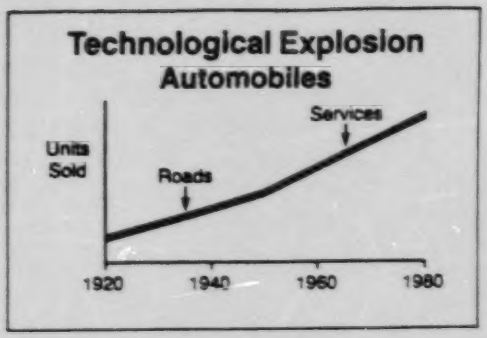


Figure 3

We spent a lot of time this morning talking about deregulation. I would say that the introduction of competition in the voice intercity market is certainly driving some cost pressures there; and in the data communications market, the packet networks have been much more cost effective for the last five years. It took them that long before they became adopted and accepted and stabilized to the point where a lot of large users were willing to move their traffic over onto the public networks. I believe that we will see not only greater services in the future through competition, but also lower communication cost through shared networks and other various alternatives.

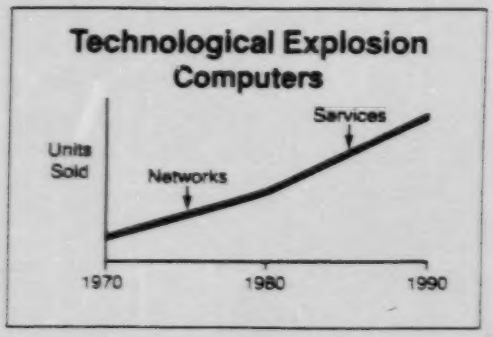


Figure 4

That gets me into the subject of alternatives to Bell. Some of you are quite familiar with some of these, such as private networks. Private networks are typically connected by leased lines, either multi-drop lines or point-to-point. Public data networks is a little newer concept for most people. By that, I mean shared network services. We have other common carriers such as SBS and MCI-net. We read a lot about DTS—standards for digital termination systems. It really has not done much to this point. Coming in the future are optical disks for information storage and transfer. I throw it in the category of communications, because it is another way of transmitting information between users.

I would like to now discuss in detail some of the advantages and disadvantages

to these alternatives. The leased line, point-to-point network is an example of a private application. It can be finely tuned for specific application, such as what Don Muccino described with the special polled protocol of OCLC. It also can be tightly controlled by the owner or the organization managing it. It does have limitations in that it is difficult to expand geographic coverage. It can be very expensive, particularly for smaller users. In order to add reliability through such a common network principal as redundancy, which means duplicating facilities so you never have a single point of failure that can take you out of business, it becomes quite expensive and increases costs dramatically.

We are all familiar with and use every day the existing dial-up telephone network. It is similar to leased lines in many ways; but it can either be in the form of, again, private facilities, long distance services, or WATS services. The major advantage is it is ubiquitous. It exists everywhere. We are all trained and accustomed to using it. The example I use with my hardware engineers when we talk about keyboard fright and computer phobia is if you can make it as simple as a telephone, we can probably sell it. That is the key challenge I believe we really have before us in our industry.

The disadvantages are shown on the right-hand side of figure 5, particularly the first two. The other common carriers that I mentioned, such as satellite and microwave transmission facilities, tend to be quite expensive when you include the necessary interface equipment that is required. For the interactive user, i.e., the user is sitting at a device waiting for a response to come back, our experience has shown the inherent delay in satellite transmission is simply not acceptable. Users will not tolerate greater than five-second delay when they are zeroing in on critical work. These approaches are particularly better suited for higher speed or large volume data transmissions. That may change as we integrate into the total integrated services concept in the future; but for now, it is quite true.

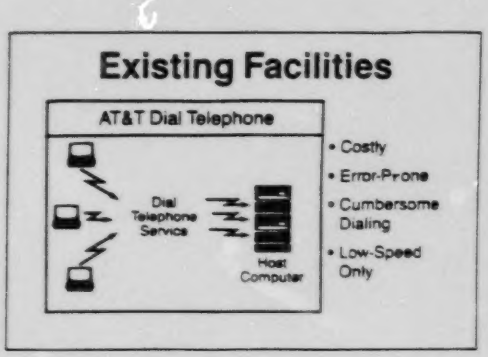


Figure 5

Digital Termination Systems, or DTS, incorporate both satellite and point-to-point microwave transmission. It received a lot of hoopla in 1980 and 1981 when Xerox decided they were going to try to build a whole new program on this concept called Xten. Frankly, it has not yet been proven from an economic point of view and Xerox abandoned their project in 1981. The benefits of DTS are limited primarily to the local loop area by bypassing the last mile of transmission facilities. In the backbone network, you do not need this today. The cost effectiveness of the

backbone network are very good on just about any of the technologies I have shown you here.

Optical disks, I believe, is a very exciting and interesting concept. It is probably the hottest new mass storage technology that is coming down the Pike. This is a disk that is read by a laser. It is almost mind boggling the amount of data that can be stored on a small aluminum or platinum metal platter; and you have seen this, I am sure, in previous demonstrations. It has some severe limitations and basic restrictions, however. First, I believe the only system that I have seen commercially available is a read-only system. The Japanese have read-write systems but they are still in their laboratory environment. The optical disk offers tremendous economies in the storage of data, though, and, therefore, it is important that we be aware of it. The disadvantages, I believe, are equally significant, particularly the cost today of a player or reader device is around $10,000. Because of this, it will not find its way into too many offices until that changes and the inability to update the date or manipulate it without sending out a new disk is overcome.

I said earlier that technology is abundant, and there are many very, very capable people to try to solve some of these problems. I will not rule out we will not see a solution to some of these limitations soon. The microcomputer boom has touched all of us and will continue to do so. It has surprised everyone, including the giants in the industry. This is one reason why this rapid growth will continue to accelerate. I would just add that to the list of trends that are causing some of the major repercussions we see in the marketplace .

The public data networks, I believe, are the best alternative. I will use UNINET as an example, but the technology that I am going to explain is really very similar between all the packet switched networks. Bill Utlaut has already explained how that works, so I will move through that very briefly. The public data networks that exist today have been evolving over the past ten years, and came out of technology that was developed by the Advanced Research Planning Agency of the Department of Defense (ARPA). TELENET was the founder of this technology in a commercial sense, based on the previous ARPANET. We have now advanced to the state where the network technology is stable. Just about all the hardware companies have adopted the X.25 standard and are building it into their equipment. The one thing that is very reassuring and really very positive is that the standards are being opened and incorporated into the devices, much more than they have been in the past five years. What a public network has done is they have taken the hundreds of different devices and said, "We'll make them compatible and talk to each other." That is the one major benefit of which you should all be aware. They let a personal computer talk to an IBM and a Wang word processor and take some of the agony and headache away from end users who are really never going to be able to solve those kind of problems. The key benefits are that it is a leading technology to serve the growing data communication needs, and it offers inherent cost advantages or cost economies through the sharing of facilities with many users.

Before I can properly tell you the pros and cons, I need to tell you quickly in layman's terms how it works. A typical user connects to the public network from just about any kind of terminal via local phone call or through a dedicated access line, if his volume warrants that. The public network through a series of intelligent switches sets up a circuit or path to the destination of host computer. The example in figure 6 is very similar to what we saw this morning. I want to elaborate on just a couple of key points.

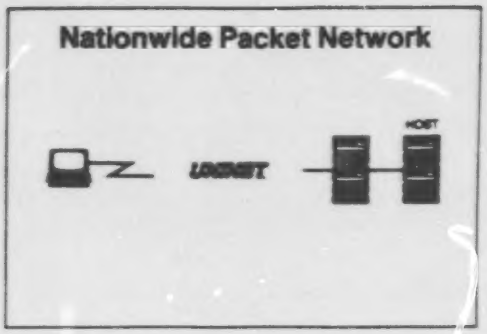


Figure 6

In Figure 7 I am using a picture of sending a dollar bill through the network; and if you were to packetize this and break it up into three pieces, you would have the front portion going down through a switch on the lower part of the diagram and the upper pieces going through the top. What happens through this network is each step along the way, there is intelligence that checks to make sure the message has been received properly; and if the routing is congested, it can automatically seek a new path; or if there is a circuit that is out, it can automatically route around that. It is done through computer switches that are just as smart as the computers to which it is connected. At the end, it reassembles the original message in the form it is intended to be. Some of these are total digital, but most of this transmission is used by way of modems that are interfaced in inappropriate places.

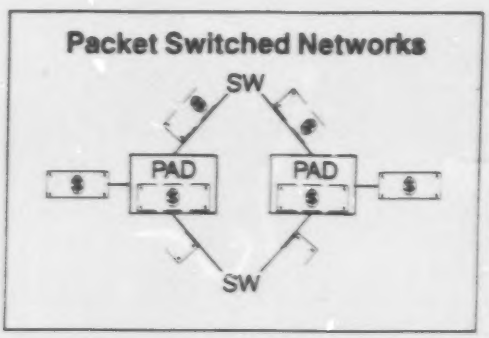


Figure 7

The actual architecture of such a system is, of course, more complicated. I did not want you to think it was as simple as that and have everyone here try to start their own packet network company. The key elements of the network are shown in figure 8. The different networks each do it a little differently. UNINET is faster because we have fewer switches that a message has to transverse through in order to be completed and it is a very cost-effective, state of the art network.

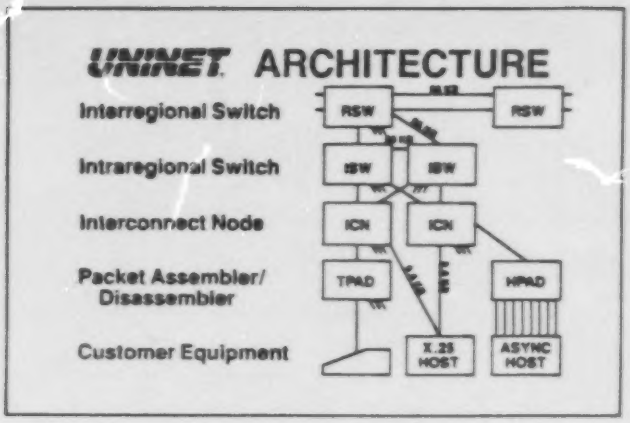


Figure 8

The benefits that I said you achieve through sharing facilities are really important. Greater reliability is provided through the intelligence that is resident in the network and the engineered redundancies that are automatically there. Accessibility through broad network geography is important so you do not have long distance calls in order to utilize one of these networks and many other benefits to the end users, such as special response and protocols for the rapidly expanding personal computers.

UNINET is managed through a very sophisticated network control center that runs year round, 24 hours a day. This center takes some of the problems out of trying to run your own network, and the very difficult cost of keeping the trained people that you need to do that. What we are able to do, because of the economy of scale, is build in diagnostic capabilities to tell automatically when things are acting up—we hope before the user sees it. That is not always the case, but that certainly is the objective. We have a customer support and service organization that stands by ready to help end users with virtually any type of problem. Their job is to answer and provide support to any and all users' questions—everything from how do I turn on the terminal to why do I see this strange character on my screen. We have to manage our network through performance measurements that are constantly monitored and capable of signalling problems before they really begin to affect customers. These are just a few of the reliability measures that we use. It is said that in order to manage something, you have to be able to measure it first so that you know what you are trying to manage. The network is a local phone call away in over 305 cities, expanding to 400 by the end of this year. At the outer reaches or periphery of the network, we have what you call a port that will accept either 300 bits per second or 1200 bits per second terminals. You do not have to call special numbers for different speeds of terminals. The trunk circuits going into the backbone network are obviously higher speed, 9600 bits/second, and the backbone is running at 56000 bits per second.

To summarize for you the mission at UNINET is to continue to evolve, not revolutionize the state of the art in data communications; so that we are positioned to adopt and integrate many of the communication requirements that are not being met today. We want to be able to do this in a cost effective and efficient manner.

To do that, we have already begun work on what we call an advanced network, which will be coming on line by late 1985. This network will put more capability out at the periphery of the network, for users who might be using databases two or three steps removed. We will make these accessible direct from their access points efficiently through gateways at the periphery of the network.

We have a joint venture with a major builder out of New York, where we are going into office buildings around the country and starting off with a total service concept for the building, encompassing all telecommunications, voice, the PABX, video conferencing, information services, data communication needs, etc. The user in a multi-tenant office building, does not have to fight this battle each and every day separately, but can be served with the total solution. Our 1984 focus is primarily in the office automation area, with enhanced personal computer support. We will be offering higher speed services, the 2400 bit per second error protected protocol by third quarter.

With that, I would like to open the floor for questions and to make sure that I respond to the particular areas that interested you most. Thank you.

DISCUSSION

MR. ATKINSON: Questions for any of the speakers on any topics so far? We will deal with the social and political aspects this afternoon.

MS. HENDERSON (American Library Association, Washington Office): I would like to ask Bill Utlaut a question. Your remarks indicated some NTIA activities in international communications and standards and spectrum allocation. Is that your current focus, or could you elaborate a little on the NTIA's specific role in domestic telecommunications policy and how it relates to other federal agencies with a role in that area?

MR. UTLAUT: We have responsibilities in both areas, both on domestic telecommunications matters and domestic information matters, and also the international. Certainly, as I tried to indicate, there is some very important international activity going on. One of our particular concerns is trying to establish an international environment whereby our manufacturers of telecommunication equipment and telecommunication services can operate in an equal and fairly competitive position that is consistent with our free enterprise system. We are running—not only in telecommunications, but as you may be well aware, in many other endeavors—into more and more complex situations which for various reasons probably always come down to economic decisions. There are many, many barriers being set up for information transfer. You see this through the UNESCO, for example, with newspapers and the desire to license journalists who go into foreign countries and report. This was one of the reasons, I believe, that the United States took the rather severe action of notifying the United Nations that we may drop out of UNESCO.

We are running into many of what we call nontariff barriers. This is a difficult time for transborder data communications. There are some very valid arguments as to why countries believe that all data generated in that country should stay there. This makes it more difficult, then, if you are going to have a free interexchange of information services.

If there are more questions on the international, I will try to answer them. We do play a major role, along with the State Department, though the State Department itself, of course, has the responsibility in the Executive Branch for dealing with foreign policy, under presidential guidance.

The Federal Communications Commission is another important player when it comes to telecommunications. You may note that a number of the pushes that they have tried to give to enhance deregulation and the pro-competitive spirit gets into international communications, allowing record carriers, for example, which used to only be able to serve record, to serve voice as well. Voice carriers could only serve voice. That has been opened up so that record companies can handle voice messages and vice versa. The FCC does not have a major international responsibility, but certainly domestic policies influence what goes on in the international arena. With the White House, the State Department, and the FCC, NTIA is one of those organizations that develops both domestic and international telecommunication policies.

Congress, of course, is a very influential player. Some of the discussions on access charges that Don mentioned this morning—Congress has stepped in very

vigorously there. And there is a degree of tension (I believe that is the right way of putting it) between the FCC and the Congress at the present time, and a lot of tension between you as users and the networks, for example.

There is not a simple answer to any of these. It is a very, very complex situation. We are moving, in the United States, from a situation in which we have essentially a monopolistic operation of the telephone networks to, as Tom has described, thorough and complete competition. One of the things that may not be recognized is that there is really a cost to competition. There has been, of course, national policy in the past that dealt with subsidization of one part of the service area to the other, and this is one of the issues that is being fought over now. People who are being subsidized do not like to recognize that they may have to pay full cost. If we have free and full competition, I believe we must let the marketplaces take their tolls and operate the way they are. Right now we are in a mixed bag of competition—competition, but not fully free.

MR. LUCKER (Massachusetts Institute of Technology): I do not want to address this to anybody in particular. An impression I have is that one result of deregulation will be the lessening of support by AT&T for CENTREX systems. Most of the large institutions represented here have large CENTREX systems. Many of us are now planning or thinking about developing campus-wide telecommunications systems using fiber optic technology. Is this an inevitable result of deregulation? And do any of you have any comments as to how it would affect your perception of how your various parts of the telecommunication world would interact with our campuses?

MR. UTLAUT: I do not know that I can answer your question adequately for you. You really ought to talk to AT&T; it is their strategy. CENTREX is a pretty old technology, and it will be changing, of course. Regarding the question on fiber optics, recall some of the charts that I showed you about the tremendous growth of telecommunications and the need for wideband width. Of course, fiber optics has the capacity of tremendous amounts of communication. That is not to say that the twisted pair which you already have does not have much more information carrying capacity than it is used for at the present time. I believe you will see certainly that there is penetration of fiber optics going on at the present time in the areas of high density communications. You will see that many of the carriers are putting in fiber optics on their long-haul systems, in high density areas, Washington up to Boston, New York City, and areas such as that. The real fact is that to get more coaxial cables pulled through the tunnels in New York City is an impossibility. A fiber cable is a fine thread, essentially, and it is possible to put it in.

The fact is that there are so many possibilities for telecommunications in general that the capacity to handle all of this is going to be there. There are improved switching technologies. The fiber optics will probably be last to be used to get into the home for a couple of reasons. One, if you look at the technology that exists in this last mile or last five miles to your local office, that technology is a hundred years old. Essentially it is the same. Certainly, the hand system you have—the subscriber's hand telephone set—has had improvements, but the technology of carrying voice over a wire to that first switch is essentially the same as it was almost a hundred years ago. Of course, the home itself does not have a need for the large communication capacity of fiber optics. Whether the fiber penetrates down to the local subscribers is questionable. But certainly in universities or places where there is a higher concentration of information transmission you may expect to see fiber in the future. You will see continual

improvements in the switching. Rather than CENTREX, the trend will be to all-digital techniques, because it is much easier to modify. It gets away from the difficulties that one has with the mechanical switches, the electromechanical switches, and the noises.

I will stop there and let the people who run networks tell you what they are going to do.

MR. MUCCINO: As far as the campus is concerned, there are a number of switches out now that will carry both voice and data. Some of them are designed to hook into the network that currently exists on your campus. As a matter of fact, that may be one of the ways to make the transition. It plugs right into your twisted pair system. You may then use coax or the fiber for your expansion; or when you get the money to go parallel with your old twisted pair circuit, use your twisted pair as back up and go to the fiber optics. To justify it, you must have enough traffic on there to make it economical. As far as interface, we are trying to standardize with an X.25 protocol and, we hope, stay within that standard—the X.75, which is the interface between networks—that would allow us to interface directly into your campus or local network. Stay away from special nonstandard protocols is what I am saying.

There are other technologies, and AT&T has a number of new offerings. I doubt that they will drop support for CENTREX. But they will probably run the maintenance so that you probably will not be able to keep it.

MR. TAYLOR: I agree with the prior comments and add that there are large telecommunications companies that can handle the total spectrum of end users' needs. My view of what people want is end-to-end service and support. You might be like myself. Upon joining UNINET a month ago, I walked into our headquarters and found that we have an old PABX switch that is no longer supported; I cannot even find people to maintain it. It was not one of United Telecom's products, and I do not know what it is doing there; but I would throw it out if I could economically justify a new one.

If you stay with a reputable company and stay with a standard approach, such as X.25 and X.75 and other standards that have been proven, you are going to find that you can evolve gradually as your needs grow. The fiber optics are going to come. They are going to come in the backbone networks first where the economies can be very dramatically proven. But the cost of fiber is coming down very fast. There are some definite advantages to fiber, but it is a big company operation, in my opinion.

On PABX's Don is correct. There are several options out there. My suggestion would be to analyze carefully what the vendor is saying. There are a hundred-odd features on the market. Users know how to use only two or three. Many of these bells and whistles are pure marketing sizzle and not necessarily substance. The concept that I mentioned about total communications for the office building complex—being able to do that properly with the right kind of resources and support is the major challenge. We have done some of this already; GTE has done some and AT&T is still struggling.

MS. MARTIN (Johns Hopkins University): I believe that I did not hear any of you referring to cellular systems, which have been advertised on the radio. Could somebody comment on whether this is because they have no meaning—or at least no significant meaning—for the kind of alternatives that we are talking about in

telecommunications? What exactly do you see happening in that area?

MR. TAYLOR: The question is a very good question. The answer is that cellular systems that are available today are serving, almost totally, the voice telephone requirements. That is why I did not comment on it earlier. Will some of this be adaptable to, say, broadcast capability that might fit into the data communications market or into your area of need? I believe that is possible. Certainly the technology that Bill Utlaut mentioned, digital broadcast services using an FM side channel to broadcast information out, is a very cost effective, simple solution.

Cellular is similar to what I was talking about in microwave. The only difference there is that some computers keep track of different cells so that you can use the finite bandwidth more efficiently and spread it around. For example, if a receiver moves from Cell A to Cell B, he does not congest with somebody that is already over there and he frees up his allocated capacity in the previous cell.

MR. ATKINSON: Further questions, either on these kinds of topics or on telecommunications issues that you have seen or heard about and would like some discussion on?

MR. JONES (Council on Library Resources): We had Speaker No. 1 talk about the international standards organization, open systems interconnection model. Speakers 2 and 3 referred to X.25 protocols. I wonder if any of you would care to comment on the relationship between the two.

MR. UTLAUT: I would like to identify for you that within the International Telecommunication Union (ITU), there are two technical bodies, both beginning with the initials CCI, which is the French acronym for International Consultive Committee. One is CCITT for telephone and telegraph; the other is CCIR for radio.

These are made up of various study groups. The work that is going on for ISDN at the present time is being conducted mainly in the CCITT in several study groups. It turns out there are 18 study groups in CCITT. Study Group 8 is known as digital communications. It has the coordinating role for the development of standards of ISDN. All of the ISDN standards will come under the "I" series with a number for its standards operation. There are other study groups that deal in this also: Study Group 7, which is on data communications or data networks; Study Group 17, which deals with data communications over the telephone systems; and Study Group 11, which deals with signaling.

The X.25, the X.75, and the X.21 standards are older standards. They have been developed, though, within the CCITT. I mentioned the open systems interconnection, which was originally started in the International Standards Organization—ISO, just the reverse of OSI, the open systems interconnection. This seven-layer structure that I showed you came out because of computer communications. It turns out that the OSI model is not adequate in detail and complexity really to take care of ISDN. There are factors that it does not cover. The body of people in the ITU working on all of these are very conscious of all the standards.

When we talk about X.25, you should recognize that X.25 or almost any of these standards is not frozen. There are continual improvements and modifications taking place all of the time. We hope X.25 will never make a sudden, big flop. Otherwise,

a lot of the equipment manufacturers are going to be really upset and so are you. There is a stability in these standards.

One of the things that is very interesting about the ISDN development of standards in contrast to the X.25 and X.21 is that X.25 did not come until there was total chaos in getting systems to work with each other. The plan for ISDN is the first time that, I believe, standards are being developed before the networks will be constructed; and this is necessary. There is going to be such a tremendous amount of resource expended in developing the new terminals, as well as the networks, that one has to have some pretty strong assurance that the standards being developed are going to have a longevity so that manufacturers can with confidence put the money into developing these systems. I would like to emphasize that from the U.S. perspective, for all of these standards, there is an attempt to develop functional standards, functional as opposed to essentially the electrical means by which you develop those functions. It is our view, again, if you can describe what the black box is suppose to do, that through innovation and creativeness of manufacturers, that is the better way. This will reduce costs. You will see much more creativity brought to this.

When I was talking about some of the problems we have run into in international arenas—there are countries that would like to prescribe precise colors of wires and things like that that are to be used so it gets to be a real barrier. I will give you a horror story. One country, at one time, specified a certain paint that had to be on the front of the equipment with detailed specifications as to the clay source. The only place that paint could come from was that country, and the only equipment they would buy was from manufacturers in their countries. That is one of the reasons we are trying very hard to keep these standards open and functional rather than solidified into technical details.

MR. DE GENNARO (University of Pennsylvania): Hugh, you asked the question before about the prices and how they were going to fall, and Tom did say a few words about it. It did not stay with me. Could some of you comment or reassure me that all this divestiture and all these changes are ultimately going to lead to better communications and particularly lower prices; and if so, how soon?

MR. TAYLOR: I feel daring to start off here on that question. Because the question is so broad and subject to interpretation by just about anyone in the room, I would like to say two things. First, the voice communication, long-distance services market is such an enormous market—it is projected to be a hundred billion dollar market by the mid-1990's—that the FCC is opening it to competition, which, I believe, will prove very valuable. You cannot have effective competition, however, when one company has 90-plus percent of the market. You can refer to many studies that have already been done on what constitutes effective competition. It is necessary to get at least a couple of companies that can have 15 percent market shares, and then one might surmise if one other had 60 to 70 percent. Will greater competition lead to more services and lower costs? I absolutely believe it will.

In the data communications market, TELENET started off being so inexpensive that for the first three or four years, no one believed it was worth trying. People believed it could not be acceptable quality at that price. Due to the benefits of packet switching technology, UNINET, TELENET, and TYMNET have held prices down at somewhere around almost a third of the competing DDD and WATS costs. Now, after eight years, the technology has become widely accepted and users are starting to receive the benefits of lower prices.

MR. MUCCINO: In a short term, I do not believe that we are going to see any kind of cost effective means. We are going to have to become more sophisticated users. I was at a conference last month and they said the key word for telecommunications users is BYOB—be your own Bell. You cannot make one phone call anymore without getting the Miranda Rights of what you are allowed and what you are not allowed to sell. In the long term, yes. In cost effectiveness, we are going to have alternatives out there. Right now, as Tom just said, AT&T owns 90-plus percent of the facilities, and other vendors are doing nothing more than renting them from AT&T. I am sure that AT&T is going to help to force the cost up.

The alternative strategies are in their infancy and are not cost effective on a large scale yet. Some of the other technologies, satellite and the X.25 service for networks like OCLC where you really do not have high concentrations of data going point to point, but rather, you have the multi-point configuration—those do not become cost effective to use until you start providing other services over the same network. The turmoil in service problems is going to go on for at least the next six to eighteen months with AT&T. I believe it will be three to four years before these bypass technologies and other alternatives will become effective for us.

MR. MILLER (University of Notre Dame): I have a question as an owner of a home phone. The alternate technologies are going to do a lot to lower costs for large-scale users. The alternatives will be available. What is going to happen to the cost for the individual home phone?

MR. MUCCINO: Congress has signaled us on that area as far as the universal telephone service and so forth. There is still some reverence left for making the phone call to Grandma on Mother's Day. I believe that will hold out for the private users. I believe as businesses and libraries, we are going to see more and more of the burden shifted to us. As a home consumer, you are going to see some increase, but businesses are going to see even more.

MR. TAYLOR: The other major change that is coming and starting to be implemented in different parts of the country is what we call usage sensitive pricing, or universal measured service, where you pay for each call you make on a local basis. They are trying to shift the cost burden to the people who are using the facilities the most. If your teenage daughter is on the phone making ten calls an evening, your bill might go up. It gives you at least the opportunity to control the cost effectiveness in your own personal situation.

I agree with Don's comments, too. Business is going to pick up the lion's share.

MS. COLAIANNI (National Library of Medicine): I am curious to know, since many of us are modifying terminals, is there any way that we can affect the priority with which terminals are being certified and modify which terminals are being certified?

MR. MUCCINO. We do not know. I know that is not a good answer.

MR. TAYLOR: The various public network companies, if they could be shown an opportunity to incorporate a special protocol—I can speak for UNINET directly and I believe this is still true at TELENET—they would put in the special software modifications to accept it. That is, provided it does not destroy the rest of the network in the process. Each situation like this has to be looked at on an individual case-by-case basis. That is about the best answer I can give you at the moment.

THE POLITICAL AND SOCIAL IMPACT OF CHANGES FOR LIBRARIES

Walter G. Bolter
Bethesda Research Institute

MR. ATKINSON: For our exploration of the changing world of telecommunications in which we find ourselves, like it or not, we decided to divide the program into two parts. We looked at technology this morning, and this afternoon we will turn to the social, political and administrative aspects. To lead this off, we are going to ask Walter G. Bolter, who is the Director of the Bethesda Research Institute, to talk about some of those changes. Mr. Bolter represents us, and a number of other consumer groups, in bringing the problems that we find with telecommunications to the attention of legislators, and in bringing to our attention the problems that he sees for us in new tariff laws and divestiture rulings.

MR. BOLTER: This is to be the session on the political and social side of changes in telecommunications and their implications for libraries. Since people oftentimes start a few steps back from a first-hand knowledge, telecommunications can be somewhat intimidating. I was going to start as far away from it as I could and sort of "sneak up" on it with a series of quotes.

I would like to start from the social role of libraries, at least as a nonlibrarian sees it; that is, the storage and access to information function that libraries provide to the public and that no other entity does. Access and storage of information are functions that have important social significance. As H. G. Wells notes in the Outline of History:

> Since the liberation of human thought in the 15th and 16th centuries, comparatively few curious and intelligent men have produced a vision of the world and a body of science that is now revolutionizing life. It is impossible to believe that those men were the maximum intellectual harvest of their generation. England alone in the last three centuries must have produced scores who never learned to read.
>
> All the world over, there must have been countless potential first class investigators who never got a gleam of inspiration or opportunity, for every one of that kind who has left his mark upon the world.

Wells is expressing what I would call some "social regrets." That is, he is expressing a social view of knowledge and information access, rather than a marketplace view. From a societal point of view, education and access to information are wanted by all, and perhaps all deserve it. But, perhaps only the rich and privileged can afford access from a marketplace point of view.

Let us turn now to the storage-of-ideas function of libraries. Over the years, increasing numbers of Americans have become aware of the importance of preserving the best of what has been build by each generation. The core concern is that the important parts of the content of the human record and intellectual creativity are protected and made fully accessible for those who want or need to put that record to use.

A paper that you will discuss tomorrow elaborates on this point. It was sponsored by the Council on Library Resources and addresses information in terms of content rather than "books," or what the general public associates with the role of libraries. This role really relates to the protection and preservation of information, or the storage of content and the function of making it accessible to all, even if all do not have the ability to pay. This is a unique role of libraries.

The task of facilitating information transfer between persons, between machines, or between persons and machines involves various technologies. Let me address two of these: computers and communications.

In regard to computers and the storage of information, let me quote from GTE's Lee Davenport in 1979, five years ago.

> ...integrated circuit chips today have capacity of about 16 kilobits....On such chips, one can store about three pages of information that is instantly accessible, store and retrieve information. Super chips may be available by 1990. These can store an average library book of information.*

Another quote is of more recent vintage, namely, last Monday's Wall Street Journal.

> Today IBM introduced a so-called ram chip that can store at least one million bits of information, the equivalent of a four hundred page novel. A 16 million bit chip is on the horizon.

Apparently, 1990 is coming a little bit sooner than was foreseen only five years ago.

Thus, for one of these technologies related to the storage and (instant) access or retrieval functions, we are seeing lower costs and higher capacity, which translates into lower storage costs and users' direct access to information.

The second technology is communications. This requires considerable elaboration. Communications provides the links, or "highways," between computers and people, and possibly, in the future, between persons and machines. It can provide access for the rich but, in our society, also for the poor; even for those in outlying areas and enfeebled, or who cannot make direct physical trips to where information is stored.

IBM, one entity that is very significant in computers, has determined that these links or highways are so important that, four or five years ago, the firm made huge investments in communications. Until this point, IBM has invested $350 million in Satellite Business Systems to insure that it continues to have links for its main frame computers. IBM realizes that it and its customers must have continued access to information, so that the processing of information and its manipulation will not be left behind because the links may become prohibitively expensive. Thus, IBM has funded a wide band company that has yet to produce a dollar of profit; IBM has put in $350 million just to protect its links to information. IBM realizes that the "other technology," namely, communications, will affect it severely, as it will other entities in the information industry, including libraries.

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* Walter G. Bolter, Depreciation Reform. FCC Docket 20188, 1980.

In the past, communications links were closely regulated and government controlled. Prices were stable and the links were inexpensive, at least in comparison to today. Current information suppliers, however, are headed away from a regulated, government-controlled industry, and toward a deregulated or marketplace-regulated environment. This environment has very different connotations than one that is government controlled.

First, prices are definitely not going to be stable. Indeed, they will be very unstable, changing by the day. Links are going to be increasingly more expensive, both for long and short haul communications. Notably, as Don Muccino and others have pointed out, on October 3, the private line rate increases were put into effect, ranging from 51 percent to 138 percent for some libraries. On January 25, 1984, libraries were given a reprieve, largely because of other large users' objections to surcharges, to which the FCC listened. Thus, increases for libraries will vary not from 51 to 138 percent, but from 36 to 106 percent.

Are libraries the target of private line increases? Emphatically, NO! Based on the latest figures, library revenues for telephone companies constitute about .3 percent of the total; yet, library increases are about four times the average for all other private line users. Library revenues on a dollar basis were $6.8 million, a figure that you should remember, because the private line total is well over two billion dollars. In addition, the FCC has assessed a $6 access charge, even if an entity does not use any long distance service. In a related Court of Appeals proceeding, it appears that there is no way out of these increases. The judge seems to be persuaded by economic efficiency or marketplace arguments that these increases are needed, even if some cannot pay the $6 charge per line if they do not use long distance. Judges are not buying social arguments these days.

In relation to local links, there will also be rate increases, apart from the access line. The price of local service is expected to double or triple over the next couple of years, and continue to increase thereafter.

Now, let us discuss the communications environment, not in terms of what has been happening, but instead in relation to efforts to at least ameliorate some of these changes. So far, libraries' efforts have gotten rid of the $25 product line surcharge. In addition, there has been favorable legislation, for example, H.R. 4102, the Universal Telephone Service Preservation Act of 1983. H.R. 4102 passed the House with libraries' support, and is the first telecommunications bill of that significance to pass the House in the last ten years. H.R. 4102 prohibited the end user access fees for users. Carriers would pay them, not end users. Other items included a universal service fund which would continue to maintain some level of communications access for the poor. The bill also called for continued state regulation and controls. On the Senate side, a similar bill, S.1660, was in the works and was very close to passage when the FCC essentially took the steam out of it by revising their access charge scheme.

There are really no prospects for passage of comprehensive legislation in this Congress, in my estimation. Libraries should not, however, fold up their tents until the next Congress, and they have not. For instance, libraries are supporting a letter from Senator Pressler to the FCC, trying to convince the Commission to initiate a very novel concept—a library private line service, with rates initially set at those in effect on September 30, 1983. The dedication of those who have pushed that letter along among senators and other members of Congress shows the power of libraries. Libraries must continue in this effort and make it known that they play a unique role.

And it is truly unique. Only libraries serve everyone without charge, and out of a fixed budget. Libraries cannot pass along communications increases to those provided services. Services are provided free of charge. Libraries are not like AT&T. In effect, they must provide a universal information service, access to information for anyone, without charge. But, when costs of serving society increase, library resources are not changed accordingly.

One way of looking at the library role is that libraries are the common carriers of information for use in the new electronic era toward which society is heading. For some, libraries are the only institutions that are going to provide access to those who would otherwise not benefit from the "information age" and the marketplace environment that the FCC is fostering. Thus, libraries will need special (private line) service in some cases just to continue to maintain progress that OCLC and others have made in the past in serving the public. Such a library-oriented service is not unprecedented. For example, there is a precedent in the U.S. Postal Service book rate. And, the cost to others is small. Your private line costs are only $6.8 million dollars. This is a very limited amount. Indeed, if a U.S. Navy F-14 "Tomcat" fighter falls off a Naval aircraft carrier, its cost would be twice that of total library private line budget.

Let us now review other things that the FCC is doing. For example, it is providing guidelines for private line rates that would provide greater price flexibility on the part of AT&T. And it is investigating deregulating AT&T. The FCC is also considering permitting AT&T's unregulated subsidiaries to resell regulated services. In other words, ATTIS could buy up basic services and resell them, possibly precluding others from obtaining private line service offered under regulated conditions.

Now, consider new technologies. There are all kinds of opportunities these days for resale and sharing, as well as leasing excess capacity. The instructional TV fixed service is one example. Basically, educational uses are being converted to multi-point distribution systems. In the satellite market, there are currently 19 satellites, or 300 transponders, in the sky. Much is happening. GTE SpaceNet is going to add a new earth station network to its available capacity. Most agree today that the satellite market is going to be a buyer's market. There are firms, such as Western Union, which will put together a network as a "turn-key" operation. Also, there are the local area networks. For example, there is "ring around Manhattan" being built to provide access to Manhattan from Staten Island over fiber optic cable. However, installation times for equipment have increased across the country. In some areas, the proportion of lines that are not working seems to be increasing. For example, in a transcript of a New York Public Service Commission proceeding, one business user testified that one third of its private lines were out of service at all times.

Finally, let us investigate the best library strategy in this environment. Is the marketplace the salvation of libraries, as the FCC and others in Washington believe? My conclusion is no, the library community is too small to be saved. You will have to save yourselves. Of course, libraries could combine resources with other users as, for instance, in an association, in order to achieve economies of scale. You have an inflexible budget, and because of that the marketplace is not going to save you. Markets, though, may be helpful to a degree. As noted, satellites will be providing cheaper capacity for a few years. Private networks are a possibility. Larger users may be willing to deal with small users, such as yourselves, in these endeavors.

Libraries will need to stabilize input costs in order to continue functioning in their traditional role. They will have to stabilize local and long-distance rates by leasing, sharing, or otherwise. They cannot do so by tariff. Tariffed rates can change almost instantly in some cases. The other common carriers do not have to give any notice at all. Given the FCC's proclivities, AT&T may not either in the future. If entities such as libraries cannot pass along increases and rates that are changing on a daily basis, they are in serious trouble.

There is also the option of political action. In the next Congress, or at the end of this Congress, specialized legislation will be possible.

Lastly, certain states should be arenas for action: California, Florida, and others that are easy to identify. For instance, state proceedings related to intrastate competition are worth observing. The states will be the next battleground for the increases in tariff rates, and they will definitely be the last bastion of regulation. The states are likely to end up with problems created by the FCC. In the access charges area, states are advocating that interstate portions of local access costs be allocated to the state jurisdiction. If that occurs, there will be battles similar to those at the FCC in 50 different states.

In any event, continue your political action, particularly at the FCC. Keep the letters coming. Continue to work from the outside—you are getting very little sympathy on the inside.

DISCUSSION

MR. ATKINSON: Mr. Bolter is going to take part in the panel discussion this afternoon. However, if you have questions now on the political and social aspects of the changing world of telecommunications, he has graciously consented to answer questions at this time.

MR. VASSALLO (University of New Mexico): So far, the letter from Senator Pressler to the FCC which Mr. Bolter mentioned has been signed by Senators Stennis, Boren, Sarbanes, Melcher, Randolph, Burdick, Thurmond, Pryor, and Tower. That leaves quite a few senators who have not signed. Mr. Bolter, Carol Henderson, and I have drafted a telegram, which I intend to send to my senators from New Mexico, asking senators either to send in their own letters to the FCC or to support Senator Pressler's letter. The telegram reads:

> "Urge that you sign on to Senator Pressler's letter to the FCC, which asks FCC to consider a special library private line service. Libraries use private lines for sharing data. Libraries are only a $6.8 million customer of interstate private line service, just .3 percent of the total, so this change would have no perceptible effect on others' rates. But the increase libraries face is four times the average increase for all private line customers."
>
> "Pressler's letter would assure that the FCC continues to look at the impacts of this and other tariffs and charges on libraries and also recognizes libraries' unique social role. Please submit a letter from your office which covers this point or contact Diane Swenson in Senator Pressler's office to sign on."

By the way, I plan to add a special New Mexico touch at the end of the first paragraph: "This is especially crucial to New Mexico libraries, most of which are small and separated by great distances." I would suggest that perhaps you add a similar local point to your statement.

MR. BOLTER: May I comment? Before I went to Washington and became embroiled in the process there, I thought that nothing ever comes of various hearings and legislative proposals, etc. I found out from the Commission that those changes they make with relatively little social input really do, in fact, have some social output. Increased rates, lower quality of service, and so on. The point I want to make about Pressler's letter is that the process has offsets—balances if you will. The marketplace approach at the FCC, given the party that is in power, is right now subject to considerable scrutiny by the House of Representatives and the Senate, who like to maintain their own jurisdiction and power. For that reason, a letter with a lot of signatures, particularly senators, definitely has an impact on the FCC. What really got the Commission to take off that $25 charge and to delay the imposition of access charges on a single line businesses and residential users was a letter just like that with some 32 senators' signatures.

The Commission does, in fact, react to such pressure. There is nothing commissioners hate more than going up to the House of Representatives, in particular, and being scalded in public and taking all that bad press. So though the exercise perhaps does not always have a one-to-one correspondence with legislation that goes through the entire process, it does have an impact on the FCC. That is

the first stage, and that is why, personally, I would promote something like that. When I was at the FCC, we scurried when the Hill said something, even if it was a comment from a representative of some distant constituency in Montana. Every letter had to be answered when it was signed by more than one representative.

MS. HENDERSON (American Library Association, Washington Office): In addition to the statistics that Walt mentioned, one of the things we learned as AT&T has been communicating with us—where some of the statistics like the 6.8 million came from—is that library customers, leaving governmental entities aside, are the largest group of not-for-profit customers of interstate private line service. The fact that ALA, ARL, OCLC, and various networks and individual librarians have been making their voices heard was really important, because we were the only not-for-profit entity affected by this particular tariff, and we really did have a unique message to get across. I believe altogether we have had an impact on the delays that have come about.

We discovered, for instance, that what we thought would be natural allies, for example education in general, was not as clearcut as we had thought. Educational uses of interstate private lines are very small, less than $3 million per year. There is, however, substantial intrastate private line use among state university systems, library circulatior systems, and so on. I have a question to ask Walt as to what would be happening to intrastate private line rates and what could be done about that by libraries or educational institutions.

MR. BOLTER: You have got 50 different jurisdictions and not quite that many answers. In general, however, most state commissions have concluded, based on a full cost analysis, which I will get into, that the private line services that are within the state's jurisdiction, have been underpriced. From their standpoint, those rates must go up as well.

The other portion of it is the access charge, the underlying cost of local facilities. How will they be dealt with? That is how you start to get a very mixed reaction. Some states, for example Texas, have put all of the end user charges for the intrastate portion of access charges on carriers, because they can do so. As far as intrastate is concerned, the state commissions decide from where those costs are recovered. Some states, unfortunately Maryland being one of them, have decided just the reverse, to use the full FCC model and put all these charges on end users. And there are mixes in-between these two examples.

MS. ECHELMAN (Association of Research Libraries): This is a suggestion to the members. For a number of reasons, partly having to do with a lack of good communications, it has been very difficult for the telecommunications coalition, which includes libraries, associations, regional networks, and so forth, to interest the Washington higher education community in the telecommunications cause. The single exception to that, the Association of American Universities, is represented at this meeting by John Vaughn.

It would be very useful, when you send this telegram off to your senators, if you also send it along to your university government relations officer and ask them to get in touch with the president or the appropriate officer of AAU or the American Council on Education or whatever the organization is that they are most involved with is. We need their help if we are going to get anything done.

MR. BOLTER: If you get involved, let me tell you what the opposition is

saying. First, they will say they cannot provide an exception for libraries, because then they would have to provide one for everybody else. If you do not believe the library mission is unique, you should not be here. Second, they will say if they grant this for libraries, it will have an impact on rates. That is just ludicrous. The numbers just are not there.

The role that you play with this access to information in the future—I gave you sort of a historical view out of Wells—if you looked at it as a straight-thinking economist, there is really a movement toward the privatization of databases. You people destroy it because you make databases available to the public. Either through the administration's impact on the funds that create public databases or the institutions that maintain them or otherwise, there is money to be made by getting the role of libraries more and more constrained.

That is sort of what is going on in a social sense. Again, you are not like the General Services Administration. They are nonprofit, but they do not provide much information to anyone. They tend to screw things up more than anything else. You are not like state governments and you are not like the steamship industry. You provide a public service, but state governments tax you for it; steamship operators provide bad service and make you pay for it on top of it. You cannot pass on your charges; your services are provided free of charge. There is no one else like you and you are small. From a social standpoint, you should have a big input in the process. From a market standpoint, you will have no input in the process.

MR. ATKINSON: I have asked each of our panelists to address the question of telecommunications rather than to just react to the presentations that you have heard. Each will try to respond from a particular point of view: JoAn Segal from the point of view of a network director, William Stolfus from the point of view of a university administrator, and Patricia Battin from the point of view of a university librarian of a research library. There will be time for questions after the last presentation.

We will start with JoAn Segal, who is the Executive Director of the Bibliographical Center for Research (BCR) in Denver.

Remarks by JoAn S. Segal

MS. SEGAL: First of all, I want to be sure you know that the BCR I represent is not Bell Communications Research, but rather the Bibliographic Center for Research, which is one of about 20 regional organizations providing services to libraries—OCLC services and other kinds of brokerage services and communications—and other activities. Many of the services we provide to libraries are dependent on telecommunications, and it is because of that that Hugh asked me to appear here today as a representative of this type of organization.

The big question, I would guess, is: is a network of any use to a library, especially a large research library in this area? It seems to me that the major function that a network can serve is in the sharing of telecommunications costs. I would like to go into some of the ways in which that can happen. First of all, I want to define what the elements of that cost are, what the goals of such sharing are, what some of the charging options are. Then I want to talk about local TELECOM savings and how our network is responding to a series of attacks in this area.

The elements of our costs, which are your costs aggregated, are in several areas for us. The major one is OCLC; the second is what I call POTS and WATS, namely your plain old telephone service and your WATS lines; and third, is VANS, your value-added networks. The largest of those by far is OCLC. Our bill, which comes to us from OCLC—through OCLC from the telephone company—includes line or circuit charges, charges for station terminations, and miscellaneous charges. That is the present tariff, before the changes, which Don showed you this morning, when the new rates go into effect. At present, that amount for us is approximately $34,000 per month. Then there are charges for modems, which are constant, set by OCLC. Those are going down, and will go down somewhat further on July 1. Another element might be a network charge or an OCLC charge. In our contract, we do not have such charges, but our contract with OCLC states that there can be such charges and, in fact, there are costs to networks and to OCLC for handling bills for negotiating and so on, which to date have been covered in overhead costs. Then finally, there are multiplexing charges if the network has a multiplexer—we have amortized the cost of the multiplexer—and there are ongoing costs of a multiplexing operation.

The POTS and WATS for us is approximately $3400 a month. It is a large

amount of money because we operate WATS lines for all our libraries so they may have the technical assistance they need without paying for telephone calls. In addition, there are the charges to the value-added networks, such as TYMNET, TELENET and UNINET, which are part of our general operation.

Let me say that the goals of sharing are to allocate these costs fairly among all the users of the network and to allow some flexibility for the network, while at the same time providing predictability for the libraries in terms of how much they will pay each month for the upcoming year. The flexibility for the network is also necessary, however, because there are some features of these charges which we cannot anticipate. For example, when more than 21 terminals are on a line, OCLC splits that line in order not to have the signal degraded. When a line is split, it immediately increases the telecommunications costs greatly, and we have experienced the addition of 12 lines in that fashion over the course of the last 15 months, so we have now some 26 lines in operation.

Charging options which we have in regard to OCLC are very important to consider. This is the situation which the network finds itself in. If we do this, it places a heavy burden on multi-terminal users, namely you; but at the same time, it provides a motivation to improve per terminal productivity on your part. That is one way in which the allocation can be made. A second is to divide the charges by the number of modems. This places an unfair burden on the one-terminal users. That was something Don mentioned this morning, i.e. increasing the cost on the modem double for a really small library is extremely high and prohibitive. Those rate increases, if they are too great for the smaller libraries, could actually result in their giving up OCLC, which in the long run will increase the cost to the other libraries. There is a really fine balance. A third option is to create a combined algorithm. I would say about half the networks now do. At BCR, our algorithm this year goes as follows: the modem cost is a constant; the first terminal is $200; the second terminal is $100; the third terminal is $50; and subsequent terminals are $25. By setting that price every year based on what we estimate our bill for the whole year is going to be, we can guarantee that libraries do not pay more than their share and probably just a little less than their actual share of the total amount. But we have to forecast very carefully, because if we get more subsequent terminals added, then low cost terminals will outnumber the high cost terminals and we can get into a position where we are not recovering our costs. We have to be careful with that.

On the POTS and WATS, we have simply considered that part of our operating expenses. As far as the use of the value-added networks is concerned, we generally charge that as part of the use of the databases which are accessed using those value-added networks.

What are some of the local telecommunications savings that we can effect? Under OCLC, the chief way in which we have been able to help the libraries in our network has been multiplexing. OCLC began a program of multiplexing about two years ago, and we were one of the networks where a multiplexer was placed. We now have that one multiplexer, which is four of 26 lines. We have now paid for that. Now we have a beautiful piece of equipment which saves lots of money on the long line, and that is now going to be the least expensive part of our telephone bill. Even for the period that we have had it, it has paid for itself. There is no question about it.

In the area of value-added networks, through our group contracts, we have a

great deal of interest in keeping those costs down, and the best way we can do that is to get more nodes locally for our libraries. That is to say, if we have a library in Laramie, Wyoming that is using a lot of DIALOG service, it is advantageous for there to be a TYMNET, TELENET, or UNINET access point close to home so that they do not have to make a long-distance call to get into the value-added network. We have done a lot of lobbying in that regard, and I must say that UNINET has been extremely responsive in that area.

In the area of POTS and WATS, we have purchased an in-house telephone system, which has been very effective, and we are very pleased with it. It is called INTERTEL. In addition, we participate in one of the long-distance systems which allows us to save money on long-distance calls, particularly when we are outside the office. Another option which is becoming more interesting recently is the use of dial access, particularly for OCLC. This is something which in our network has a considerable impact, perhaps less on the research libraries than others; but even in that area, it is something you may want to consider. In the 1983-84 BCR calculation of charges, the TYMNET and TELENET options for access to OCLC were charged at $11 an hour, whereas one leased-line terminal was charged at $200 and then $85 a month for the modem. Therefore, a library that uses a terminal less than 25 hours a month would be spending less money if they went to dial access than if they used the leased line.

There are some drawbacks to dial access. It is cumbersome to edit things. You have to do it on a line-by-line basis, and the time you spend online is a great deal longer because of that. Therefore, not only your telecommunications are costs there, but your staff time increases as well. However, we have had a new thing thrown into the works here; and when the tariff changes, the BCR calculation will be as follows: we expect that the TYMNET and TELENET charges will be about $12 an hour. Incidentally, that was not mentioned this morning, but we do not believe the impact of the increase on the value-added networks is going to be anywhere near what it is on the multidrop private lines; and so we expect that to have a very small increase. If our costs go up 44 percent, which is about what you saw Don project for us in BCR, the first terminal would be $228; the modem, on the other hand, has gone down and would be $75. So the total for one terminal would be $363. That drives up to 30 hours the number below which it is more advantageous to do dial access.

Another very interesting addition to the stable now is the M300 terminal. I know you all know about M300's. I wonder if there are some things about it which you have necessarily considered. It is not only swap-out-able for another terminal in your chain, but it also can access OCLC in an asynchronous mode by a dial access. This is the first time OCLC has made a terminal available to dial access that has all the editing features that its other terminals have. That means, first of all, you may use this terminal without having to chain it and without having to pay a leased line fee for it, but rather pay only for the hours that you are actually using it. Second, enhancers for the IBM PC are already available. For the M300 we should see the microenhancers coming up very soon. It makes it very feasible to put an M300, dial access in the interlibrary loan department where it can be used for a number of purposes, and can be connected asynchronously to the OCLC system for a minimum of hours a week and used very effectively. The editing capability of that terminal is exactly the same as any of the other terminals which, therefore, reduces your staff online hours; but in addition, with the microenhancers, it allows after-hours operation.

Finally, let me say that in responding to this crisis we have done a number of

things which I have found extremely interesting. I have found the presentations this morning very educational, partly because I have slowly been learning a little bit about telecommunications over the last year or more, and have been very interested in it. The presentations this morning were extremely fine compared to some that I have heard over the last year.

The BCR Board will set prices for telecommunications at its meeting next Monday and probably will decide that they will increase these prices if and when the new rates go into effect.

We will also continue our membership in the telecommunications consortium, which ARL and the ALA Washington Office have been so instrumental in establishing. I would like to say a little bit about that effort. The telecommunications consortium was born out of a meeting held in Washington last October under the auspices of the Library of Congress Network Advisory Committee. There was an excellent program, and Carol Henderson of the ALA Washington Office did yeoman's work in putting it together, and in working with the ARL Office in carrying out, after the program was over, an effort known as the telecommunications consortium. Walter Bolter serves as the consultant to that consortium, and the information we have been getting has been extremely valuable to all the libraries in our network and many others. For a contribution which was not difficult for the network to make, we really have received our money's worth. As a network, I am very grateful to ARL and ALA particularly, to the Library of Congress for the meeting that set things into motion, and to Walter Bolter for what he has contributed.

We also look to dealing for the first time with Bell operating companies. We have never done this before, because everything went through AT&T, which was dealing with OCLC. You had simply to deal with one person in one place and then everything happened across the nation. I see a role now for regional networks in a dealing with Bell operating companies, letting them know who we are, where we are, and what we are doing, and what kinds of use our libraries in that particular area of that Bell operating company are making of telecommunications.

We also are going to push those M300's with our members. We are going to continue to try to get more value-added network nodes in order to keep those costs down for our libraries, and we will continue to work in training and workshop activities with our libraries on telecommunications.

Our annual membership meeting will be held next Tuesday. One of the major speakers will be on telecommunications. It is a hot issue. We must educate libraries all the way down on the lowest levels of what these issues are and how they can have an impact on what is happening. Probably we will begin looking at the feasibility of what some kind of regional gateways might be. If there are databases within a region or databases which could be accessed more inexpensively by our libraries by a gateway, we will be doing that.

Remarks by William A. Stolfus

MR. ATKINSON: Our next speaker, William Stolfus, the Associate Vice-President for Finance at Colorado State University, will present the point of view of the general university administrator.

MR. STOLFUS: You are going to find my presentation a little different. I have no slides. I am not qualified technically in telecommunications, but I know how to finance a system and I know a lot of the problems that we encountered at Colorado State University. We are just completing the installation of our own private phone system. We will cut over on May 5 for the voice part and then we will work on the data circuit.

When we started with the planning process, which I will describe to you, we really did not consider or realize the magnitude of various aspects of the system. In reality, one could end up digging up the entire campus. By the time one got through, one would be placing wire in all of the buildings and discovering asbestos one did not even know existed. We were looking forward to the prospect of having only one cable system on the campus; however, I do not believe that will, in fact, occur. And in terms of recovering costs for the telecommunications system, which had previously been centrally funded, we are now going to charge all of the users. Of course, with more users, we can lower the rates. Before, when departments wanted additional phones, it was either who yelled the most or whether we had any budget funds left. Now we can put the management decision where it belongs, and the departments can determine whether they really need that additional phone or data circuit. The students are included in our system, and we are even going to permit students who pay a deposit to use long-distance. We may regret that decision later.

When we started developing our master plan for the 1980s, the need for modernization of our telecommunication system became increasingly clear. One motivation to acquire a new system was stimulated in 1980 when Bell proposed a tariff to the Colorado Public Utilities Commission indicating restrictions for and probable demise of the school CENTREX system. The tariff said that CENTREX would not be furnished as a new service to any customer or applicant, and one could not add any additional station lines, if one had no more room on the existing switch. In terms of supplies and equipment, it would only be available to the extent it was available from existing stocks or recovered stocks. That was a part of Bell's well-known migration strategy, which would dramatically increase the rates on older Bell equipment as an encouragement to acquire newer equipment. With that in mind, plus the fact that the CENTREX was antiquated (we traced the technology and design back to about 1919, and Bill Utlaut mentioned this morning it was probably closer to a hundred years old), we were nearing capacity in terms of the voice capability on our switch and had reached capacity in terms of data communication, and further, we had no additional capacity for the faculty needs and we only had one dorm that could support student needs for the computer, we decided we wanted to correct these things with a new telecommunications system.

To start a process like this, one forms a committee, which we did in 1981, comprising faculty and administrators. That was Phase 1. When we got to Phase 2, the system definition, we hired a consultant who developed the specifications for the equipment that would best suit the needs of the university. We had hoped to include video as a part of this, but it was too expensive for us at that time. In 1982, we were in a position to start the bidding process, and we bid separately for a switch and for a cable. We had ten vendors that responded to the switch bid—American Bell was one of those—and we had six vendors for the cable. We also had a separate process for new space, a definite need on our campus and on most campuses; at Colorado State we now have a new administrative facility to house our new telephone system. Our new system includes about 7200 phones with the capability of increasing to 10,000 lines.

We signed the contracts in May 1983. We obtained the financing, which I will describe later, in June 1983, and we have been working on the project ever since. But in January 1984, to our surprise, we were suddenly in the middle of a dispute with Mountain Bell, who had gone to the Public Utilities Commission in Colorado to determine whether we had the right to have our own phone system. By this time, we had spent about $5 million on this system—we had bond holders in the state—so this dispute came as a surprise to us after we had had many consultants and attorneys working on the project for such a long time. Even Bell had been involved in many of the meetings and American Bell had bid on the system.

Mountain Bell prefaced the request petition for declaratory ruling with the statement that it was not the intent of Mountain Bell to cause CSU any difficulties. However, let me indicate some of the difficulties that were caused. Some of the questions that they wanted to be considered were: is Mountain Bell a supplier of telecommunication facilities to the students, to the federal agencies, to the private businesses that are on campus, and to the offices and employees of the university? Does Mountain Bell really have a lawful monopoly to provide these services? Is CSU a supplier of telecommunication services to various users on the campus? Is it in the public interest for CSU to be a supplier in lieu of and in competition with Mountain Bell? If CSU provides the service, is that a violation of Mountain Bell's monopoly franchise in Colorado? Does CSU intend to exclude or deny Mountain Bell the right and opportunity to provide service on the campus? If CSU is allowed to provide telecommunication services, what are Mountain Bell's obligations? And if CSU can provide telephone service, may similar entities, such as a developer of an office building in downtown Denver, provide services to the tenants for business purposes, or a developer of an apartment complex for residential purposes? Are these entities then in the resale business?

After everyone had gathered together—three sets of attorneys, plus some intervenors interested in the case, two from telecommunications suppliers and one from a developer—hearings were held on the case. In the end, what Mountain Bell wanted to know was the status of all parties or entities who could lawfully be included on the university system, whether that included our student center and three private businesses and several federal agencies that are also on campus, and whether the services offered to these parties or entities on the system constitute resale of services. So they wanted to know: if one owns a private system, who can use it, and is the institution then really operating as a public utility and subject to the PUC rules? If we had a system at CSU and calls were made to the outside world, then is CSU really reselling local exchange or toll services? In this case, Mountain Bell wanted broad rules that could be applied to any private system, including the downtown Denver developer; and, of course, we wanted it limited to Colorado State University only.

As the results of the findings in the case, it has been determined that we had several categories of service at CSU. We have the administrative and faculty employees that use the system; they were previously provided service through the Mountain Bell special school CENTREX service. We have the residents of the student dormitories; they had been on the Mountain Bell school CENTREX before. We had married student housing, which today is served directly by Mountain Bell under residential service tariffs; it was economically important to us to bring the married student housing into our system. We have four federal agencies—the U.S. Departments of Agriculture, Interior, Commerce, and Defense—at 17 different locations on the campus. These federal employees are really affiliated faculty members who perform the same functions as university employees, and they had

been provided service in the past by the CENTREX, although they had federal telephone service on their phones where the federal FTS tariff applied. We also had the three private businesses in the student center, where the Mountain Bell service tariff applied.

The hearing officer concluded that the CSU telecommunication system did not constitute public utility service, since we would be serving our faculty, students, and employees in university-owned facilities, and we were not offering service to the general public indiscriminately. He further concluded that our system did not constitute the resale of telephone service. We are charging the users, but at cost; we are not adding any element for profit. This particular ruling applies only to Colorado State University. There are lots of other schools in Colorado, including the University of Colorado at Boulder which is just in the process of going out to bid on a very large system—they will probably all end up before the PUC.

We had to give up a few things, but they were not large in terms of dollar impact on the system. Mountain Bell would continue to provide service to the private businesses and the FTS service to the federal agencies. The only difficulty is that those federal agencies will also want university phone service will end up with two phones on their desk—maybe the General Services Administration will come to their aid and do something on the FTS lines. Mountain Bell would continue to provide the coin-operated telephone service throughout the university. That means, of course, they end up maintaining their cable system and so we have two cable systems on the campus; it would have been desirable to get rid of one.

This ruling should be final on May 1, and we do not know whether Mountain Bell is going to appeal. We are cutting over to our new system on May 5. In the case of married student housing, we would like to buy the house wire from Bell, but they cannot sell it to us until this case is closed. I do not know exactly where we are on that.

Some information about financing. We did not provide enough time to finance this project because when you get into the municipal market, there is a lot involved in leases and indentures and many parties. It takes about six months to finance a telephone system. This probably varies by the legal requirements in the various states; but in the case of public institutions in Colorado, we cannot legally enter into debt, except for auxiliaries, such as housing and student center activities where by statute we can issue revenue bonds. This leaves us in a position of entering into a lease agreement where we issue certificates of participation, which are an annual renewable lease. The underwriters are saying these are renewable each year. We are saying, on the other side, so that we do not enter into the debt question, that they are cancellable each year. The truth of the matter is that if we do default, we will not have a phone system. I believe the chances are pretty good we will live up to making all the lease payments.

There are a lot of parties involved in this type of transaction. One must have bond counsel and special counsel. Since one cannot enter into debt, one must have a lessor that is related to the university so one can avoid the property tax problem of the system while one does not own it. You need a trustee bank to handle all of the payments of interest and principal to the certificate holders, and an underwriter to market all of this.

Remarks by Patricia Battin

MR. ATKINSON: Our next speaker is Patricia Battin, Vice President and University Librarian of Columbia University, who will give us yet abother vision of the problems of telecommunications.

MS. BATTIN (Columbia University): I am not going to talk about technology, nor about the extraordinary achievements of the library profession during the past decade in the application of computing and communications technology to our internal operations. The greatest reward, perhaps, for our efforts, is our unprecedented dependence on services over which we have no control. The truly radical change for research libraries caused by communications technology is external. I would like to explore today the impact of the "wired" scholar on the university's traditional organization of its information services and the enormous opportunity for leadership by the library profession to integrate the new technologies into the teaching/learning/research process in a manner consistent with the academic purposes of the university rather than the imperatives of the technology.

On many of our campuses, the plans to "wire" the campus have proceeded with very little involvement or recognition of the function of the institutions's traditional information system—the library. And in the library profession, we have engaged in an intensive decade of designing the technical groundwork for the wired scholar in virtual isolation from our colleagues in the scholarly community.

It is ironic that the disciplines of engineering and computer science, which are essentially leading the information technology revolution and the development of academic information systems, are the two disciplines in the university which have been traditionally the least dependent upon library services and support. If the academic purposes of the university, rather than the imperatives of technology, are to drive the introduction of information technology into the university, it is essential that we draw on the strengths of all three disciplines.

The challenge for universities is not simply to explore the role of computers on campus--as so many institutions have interpreted the issue--but the integration of information technology into the existing information system in a way that preserves the linkages to the existing knowledge base, encourages and stimulates the productive use of new technologies, and provides coordinated gateway access to the universe of knowledge in a manner convenient and invisible to the end user.

The paradox of our situation is that the achievement of that goal, because of the character and cost of computer and communications technologies, will require a substantial level of initial cooperation and centralization which runs counter to the strongly autonomous nature of scholarly inquiry. The very diversity of scholarly information needs requires in the electronic age an unprecedented degree of centralized, coordinated linkages and compatibilities to serve that diversity and permit the autonomy necessary for productive and creative scholarship. It is essential that we do it well, and that scholars from all disciplines participate, instead of letting it happen to them, because I am convinced that the manner in which universities integrate and use the new technologies will have an enormously significant influence on the strength and vitality not only of higher education, but our society as well.

In addition to our traditional services in support of scholarship, the wired scholar now requires a new dimension to our routine services: access to information no longer packaged in neat bibliographical bundles. Nina Matheson has noted that "we need to keep in mind that information is not a property of documents, nor of bibliographic records, but the relationship between the data and the recipient. Increasingly, the burden and responsibility of libraries in the Information Age is to deal with that relationship."*

Chemical Abstracts represents a good paradigm of this new relationship and the financial, organizational, and scholarly implications of our changing systems of communication. At the present time, Columbia University, through the Libraries, makes the printed copy available to students and faculty at no cost to the individual. Chem Abstracts is also available in machine-readable form through the library's institutional access or password. Typically, a reference librarian trained in the specific protocols performs the search for the client who pays the line charges and cpu costs. Now, researchers with personal computers want direct access to the database from a variety of locations. The American Chemical Society (ACS) does not have the capacity to accommodate the uncontrolled multitude of individual users, so in response to this need, ACS now provides for an annual fee of $6000 one institutional password to be used ad seriatim in the institution during off-peak hours, which are after 2 p.m. EST.

There are several significant points to be noted:

1) For the forseeable future, an institution must provide all three types of access. One is not a substitute for the other.
   - Certain kinds of scholarly inquiry require the information capacities provided by the printed format.
   - There will always be students and faculty who require access to Chem Abstracts but are not sufficiently specialized to possess the skills for independent searching of the database.
   - There will be a core of specialists with personal computers who require direct access.

2) The costs are not substitutional, but substantially incremental.

3) The fragmentation of access to databases is inimical to the academic purposes of the institution. Therefore, a centralized infra-structure is required to make sure that access to all available information sources is coordinated and provided on an institution-wide basis to eliminate the costs of redundancy.

4) The traditional procedures for allocation of costs and the control of expenditures have undergone a radical transformation.

Another example of the current anarchy is the following treasure hunt. In January 1984, a graduate student in Dr. Beychok's lab asked Barbara List, Science Division reference librarian, if she could find a table giving the complete protein sequence for E. coli RNA polymerase. She knew that the sequence had been completed in the last year and said that the work had been done by many different

* Matheson, Nina. The Academic Library Nexus, Yuri Nakata Lecture, University of Illinois at Chicago, 1983. Unpublished, p.1.

researchers who published their results in many different journals. She had also heard that the National Library of Medicine had a database that might contain the answer.

Various books in the Biology Library supplied parts of the sequence, but not the whole sequence. Chem Abstracts had many citations but not the actual data. Eventually, via the New York Academy of Medicine, Barbara connected with a lab at the National Biomedical Research Foundation at Georgetown University. They had the sequence in a set of 7 tables which they would run off and send to Columbia. They also told her that the National Institutes of Health had just acquired the databases and they would become public sometime in April 1984. Up to that time, an individual had to make special arrangements for access. As it then turned out, after all these efforts, one researcher at the Cancer Research Center, College of Physicians and Surgeons, Columbia University, had such access; but no one else knew it.

Another example involved a specialized database produced by Bell Laboratories. A researcher in the social sciences, wishing to use this particular database, called Bell Labs to find out how to gain access to the data and was told that it was already available on Columbia's computers for researchers at the Health Sciences.

And to dispel the persistent myth that information needs can be categorized and confined to a given faculty or discipline, a review of our searching logs for the BIOSIS database for the past few months indicates that researchers from geography, psychology, law, anthropology, and Teachers College requested literature searches from BIOSIS.

So, if we now back off and look at the information scene from a global point of view, that is, the perspective of the Electronic Scholar, sitting at his/her personal computer at home or in the office in 1984, this is what we see.

- A huge stock of books and journals, housed locally and across the world, reasonable accessible—although in slow and inconvenient fashion—through internationally standardized protocols. The overwhelming majority of these access protocols—card catalogs and printed indexes—are not yet available at the workstation. A small percentage of the bibliographic records are available in machine-readable form.

- A well-designed and internationally standardized machine-readable format for the control of bibliographic access to information in a variety of formats.

- The national capacity to link existing bibliographic databases.

- A growing number of scholar-generated machine-readable data files with no orderly form of access. The invisible network is generally the source for information about these databases.

- A growing number of commercially available databases, again with no orderly form of access. Currently, there are 1600 of these databases, of which 38% require some sort of subscription fee in addition to computer time and communications charges. Columbia

provides access to around 350 at the present time. Lists published by the Libraries, either in flyers unevenly distributed around the campus or on computer bulletin boards, are the usual means of communication about these resources.

- Incompatible hardware, software, and communications networks which have developed out of the normal scholarly characteristic of autonomous entrepreneurship in the pursuit of knowledge.

- Inefficient expenditure of individual and institutional funds because of lack of agreement on institutional compatibilities and standards, duplication of resources which could be shared, waste of faculty and student time in identifying information resources and seeking access to them.

- Serious questions involving copyright and the ownership of information, which threaten the traditional unobstructed access to scholarly information.

- Increasing shift of cost of use of information sources to the individual, with the resulting division between information haves and have-nots within the academic community.

The obvious answer to the Electronic Scholar's plight is the formation of a Scholarly Information Center by merging the Libraries and the Computer Center to provide an information infra-structure to stimulate the continuing autonomous use of information sources. The integration of the Libraries and the Computer Center, each with their specific strengths and expertise, will provide one-stop shopping for the University community as well as a stabilizing planning mechanism for effective and flexible response to rapidly changing technologies. The Electronic Scholar will require both the capacity for flexible response to change as well as the assurance of stability as he/she becomes dependent upon electronic information systems.

You may have noticed that I have not said anything about money and who will pay. That topic is a lecture in itself, but I would just like to mention a few of the more troublesome issues.

1) Traditionally, universities have subsidized the process of scholarly communication through books and journals by supporting library services and have passed on to users the costs of access to computerized information.

2) In the print era, universities provided subsidized browsing by purchasing books and journals and making them freely available to members of the university community.

3) The costs of publication and dissemination of research have been traditionally borne by the scholar and the publisher, not the university.

Technology has shattered these comfortable simplicities. The vastly expanded potential for expensive services makes it necessary to analyze our information functions, regardless of format, and establish new policies for centrally subsidized services with a series of optional, incremental fee-based services available on request. It is important that faculty participate in the identification of those

services to be included in the tuition in order to avoid the unacceptable intrusion of economic discrimination into the academic process.

Publishers are moving as rapidly as possible to a fee-per-use basis for supplying information. I believe the scholarly societies have a significant responsibility in this arena to prevent the loss of control over scholarly information to the commercial sector. We need to seek fair and equitable accommodation with academic publishers to permit affordable, subsidized browsing. One suggestion has been the purchase and local maintenance of heavily used databases, such as Chem Abstracts. At the present time, the cost of the purchase of Chem Abstracts is $18,000 per year per year. In other words, if Columbia wanted to buy 10 years from 1974-84, the cost would be $180,000 per year.

The workstation will provide the scholarly capacity for scholar-driven dissemination of machine-readable products of research. Who will pay the overhead and storage costs for scholarly output? These costs represent another set of incremental costs not now included in the University's budget.

And finally, how will we fund the availability of trained subject specialists and technical consultants on the staff of the Scholarly Information Center to provide a wide range of services to a clientele ranging from the freshman to the specialized scholar? We now provide search services to about 350 commercial databases. Our reference librarians need continuing education to update their skills as protocols change and new specialized resources become available. Both the Computer Center and the Libraries could easily expand their user services staff several times over and still not meet the demand, which shows signs only of increasing as knowledge continues to explode.

If we assume that we are successful in reorganizing our information services to reflect the new capacities and that we miraculously resolve the financial and copyright issues, our Electronic Scholar of the 90's will find the following opportunities at the workstation:

- Online gateway access to the universe of knowledge;
- bibliographic data for all printed works and machine-readable data bases and files;
- extremely user friendly access by natural language subject searching, keywords, titles, etc.;
- boolean logic, call number searching, backward and forward browsing;
- information on on-order and circulation status of documents.

In short, the capacity to rummage around in the bibliographic wealth of recorded knowledge, organized in meaningful fashion with logically controlled searches:

- downloading capacities and local interactive manipulation of all files;
- full text access to databases, data files, and published works also

preserved on optical disk;

- high resolution graphics capability;

- capacity to order off-line prints of machine readable text; facsimile transmission of journal articles identified through online abstracting and indexing services; and/or delivery of printed publications;

- links to printed works through online indexes of books, tables of contents, etc.;

- access to current scholarly output through author-supplied subject access;

- access to online Pre-print Exchange, with papers maintained online for six months and then purged unless refereed and preserved in archival records according to scholarly standards. The refereeing process would be coordinated by a national network of scholarly societies with accepted data-sets being maintained at the home institution and entered into the national data resource—either RLIN or OCLC, now linked into one national resource;

- online access to education, training, and consulting services run by the Scholarly Information Center;

- information on new services and access;

- technical information on hardware, software, etc.;

- tutorials and consulting services on literature structures, protocols for specialists, seminars for beginners;

- literature search services for those who do not want to do their own.

According to the traditional cliche, the Library is the heart of the University. I believe it is time for a new metaphor—and that metaphor is more appropriately the DNA. The new process will be a helix—we provide a basic set of services and technical capacities, users interact and experiment with the new technical dimensions and develop new requirements which then influence the evolution of a new shape for the infra-structure. As the genetic code of the University, the character and quality of the Scholarly Information Center will determine the character and quality of the institution.

And that is why it is so important that we find a way, as a community of scholars, to counteract the fragmenting forces of traditional fiercely-held autonomy, the chaos of market-driven incompatibilities, and resistance to change and seek new ways to collaborate effectively to exploit the power of the new technologies in the collective interest of the community. Gerald Holton, in a 1977 essay describing the fruitless contemporary search for a unity of knowledge—a synthesis of science and the humanities—concluded that as a result of the lack of such a unity, "the need is greater than ever to recognize how small one's own portion of the world is, to view from one's own narrow platform the search of others with interest and sympathy, and so attempt to re-establish a community of learning

on the recognition that what binds us together is perhaps chiefly the integrity of our individual concerns."*

If we can do that, we will leave a legacy for scholarship and the Electronic Scholar as invaluable for the life of the mind and the advancement of scholarship as the book collections amassed for us by our predecessors.

Discussion

MR. ATKINSON: We have a few moments for questions and we will entertain them to the panel as a whole or to any one member. Any questions, remarks, comments?

MR. SMITH (Canada Institute for Scientific and Technical Information): I have listened very carefully to what has been said, and please do not take my remark as being facetious. It is this: Who is going to benefit from all of these changes which you people are making in telecommunications? It seems to me that you are introducing a heck of a lot of problems.

MR. ATKINSON: Who was the "you people" in that question?

MR. SMITH: The United States.

MR. ATKINSON: The United States in general.

MR. BOLTER: The original push towards competition and change was instituted by two parties: the business users who started the original computer inquiry back in 1963, and the business users who forced the commissions. That is business users twice. If I went to the private line area competition, that was the product of Bill McGowan pushing the FCC for ten years running. Again, he wanted to serve the business users. I have not seen anybody appear at the FCC on behalf of the library community or residential users or small business consumers in 20 years.

MR. ATKINSON: The question really is: who benefits? That is an analysis that you just gave in relationship to the traditional American way of dealing with the telecommunications industry. There are European models that suggest that if there were a government agency, the answer would be different. That is, the alternative is not so easy.

MR. BOLTER: What Hugh is getting at is the Post-Telephone-Telegraph, which are government-owned entities in Europe. Looking at the English example, for a time—after World War II through the early 1970s—almost everything was getting to be government-owned. That is an entirely different model, though not all of Europe falls into that model. In Sweden, telecommunications is privately owned. The push in Sweden was very much away from the business side of it, much more towards labor and, if you will, the small consumer. I believe Europe is sort of a mixed bag. I am not sure that there is any one model.

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* Holton, Gerald. "Introduction. Discoveries and Interpretations: Studies in Contemporary Scholarship." Daedalus, Fall 1977, v. 2, p. vi.

In this country, at least, the FCC thought that they were serving competition, and competition was largely for those consumers that had an awful lot of demand—either business or government itself, the Defense Department most notably. TELEPAK and WATS were put in almost at the insistence of the Defense Department.

MR. GETZ (Vanderbilt University): At Vanderbilt, deregulation of telecommunications has allowed us to install a northern TELECOM local telephone network, which has saved us millions of dollars. It is a Canadian company. It has been of substantial benefit to our northern friends and we expect that the savings from our local telephone service will far and away exceed for the university the additional cost for these private lines. I believe I heard Mr. Stolfus say that Colorado State is going to save substantial amounts of money, although he did not say how much.

MR. STOLFUS: When we originally did the cost justification, we thought we were in the position that we would hold our telephone prices about at the current rate for the next ten years for about 77 percent of the cost. Now with access charges and major trunk service, we do not know. We are still sure it will cost us less over that ten-year period, though I do not have an exact number.

MR. ATKINSON: With every rate increase, they make more money. Any other questions?

MS. HENDERSON: This is really more in the nature of a comment. I believe it is important to say we appreciate the fact that the BCR has found the telecommunications coalition useful. I just want to remind you how much of an ARL effort that coalition that is. Based on direction of your Board a while back and ALA's concern about the technical voice from Joe Ford at CAPCON, we explored how we might collectively increase our involvement in this area. The idea of a coalition was born and given very strong support. We now have about 20 members, including several national library associations, three bibliographic utilities, and state and regional library networks. The coalition does not lobby under its own name, rather we have pooled resources to hire a consultant, Walt Bolter, to try to help us keep track of these developments and then, based on the expert advice and information provided by Mr. Bolter, each member organization, together with whatever expertise it has available to it, can take appropriate action. ALA and ARL together have encouraged the development of this coalition. It has been very helpful. You have been very much in the thick of it and that is very much appreciated.

MR. SMITH: I would suggest that we once again recognize the work of the speakers and the panelists, and last but not least, our moderator and planner in giving us an extremely informative, stimulating program. Thank you all.

BUSINESS MEETING, SESSION I

[Session I of the Association of Research Libraries Business Meeting, attended by the ARL membership only, convened on Wednesday, April 25, 1984.]

BUSINESS MEETING, SESSION II

Report of the ARL Executive Director

MR. SMITH: The first item on the agenda today is the Executive Director's report.

MS. ECHELMAN: You have all had a chance to read the April ARL Activities and Status Report (see Appendix A). I am not going to take a great deal of time this morning, because that is a fairly full report of the activities, programs, and projects in which ARL is engaged. I would like to highlight a few sentences from the report, however, because they illustrate ARL in its active mode.

Before I begin, I would like to comment briefly on an issue raised at the first Business Session on Wednesday afternoon, the issue of criteria for ARL membership and the size of the ARL membership. It occurred to me, after that meeting, that it might be interesting to compare the growth in ARL membership to the growth of our parent institutions and the changing demography of scholarship in the United States. So I did what all good librarians do. I asked Clyde Walton to ask one of his reference librarians at the University of Colorado to do a search for me. I have a partial answer for you; it would be interesting for someone to investigate this further.

In 1932, the year in which ARL was founded with 49 charter members, 2,401 Ph.D. degrees were granted in the United States by American institutions of higher education. In 1982, a year in which our membership grew to 117, there were 31,048 Ph.D.'s granted in the United States. That is an interesting statistic, and it indicates that the growth in the membership reflects the growth in the demography of scholarship in this country.

Just a quick note on the implementation of the five-year plan. The ARL Board has asked that one of the methods that we use to keep the membership informed about how we are doing is for me to give a brief status report on the plan, objective by objective. I will do that in written form, and I will attach it every year to the October activities and status report.

Just a few highlights for those of you who have not read through the April report. In the area of preservation, which is an area that we will be discussing in more detail in just a few minutes, ARL Microform Project Coordinator, Jeffrey Heynen, has completed a test of a detailed survey of research libraries and historical societies to determine the current level of investment in preservation

methods, standards, and output for preservation filming. The survey was tested at Stanford and Princeton Universities, the Ohio and Wisconsin State Historical Societies, and the South Carolina Department of Archives and History. The revised survey instrument should be in the mail to all ARL members and approximately 50 other institutions by the end of this month. Responses will be analyzed as they are returned, and in-depth telephone interviews will be conducted with 25 to 35 institutions identified from the survey as being likely candidates for national coordinated programs in preservation. We anticipate a final report in August or September of this year, with recommendations for ARL action to be discussed in October. The survey was funded by the National Endowment for the Humanities and has been co-sponsored by the ARL Committee on the Preservation of Research Library Materials, the ALA Preservation of Library Materials and Reproduction of Library Materials Sections, the RLG Preservation Committee, and the RLAC Task Force on Preservation. So this is an effort of the entire library community to gather detailed, specific information on preservation activities.

Another preservation item under discussion is the guide to preservation microfilming. The only thing I would like to say about that this morning is that the funding is now in place from two sources, the Mellon Foundation and the National Historical Publications and Records Commission. The principal investigator will be the Associate Director for Microfilming Services for the Northeast Document Conservation Center, Andrew Raymond, and we hope to have manuscript for review by the ARL Preservation Committee within one year, and publication within 18 months. Jeffrey Heynen and Pamela Darling are serving as technical consultants for ARL on the project, and the Preservation Committee will be advisory to the project.

The National Collections Inventory Project, which is another ARL effort to coordinate, on a national basis, some work in collection development and to extend the capabilities of ARL libraries to cooperate in collection development, is well under way. The project builds on a Research Libraries Group effort, and is using the RLG Conspectus Online as a methodology. Phase II has been funded by the Lilly Endowment and is in progress at Notre Dame, Indiana, and Purdue Universities. I am happy to announce that ARL and RLG have completed negotiations on a contract insuring that the online inventory of research collections will be maintained and made readily available to non-RLG participants. We expect to complete Phase II by the end of 1984 and to offer participation in this project to other ARL libraries, beginning in January 1985.

I have a fairly full summary of office activities in my written report. I would only like to mention this morning that we sent you job descriptions for three openings in the ARL Office, with a closing date for applications of May 15. If you have suggestions of people from your staffs or other staffs who would be good and might be interested in working at ARL, please let me or, in the case of the training officer, Duane Webster, know who those people are. Or better yet, talk to them and have them send us a resumé.

I would like to turn now, just for a moment, to the matter of legislation and federal affairs. First, the Higher Education Act Title II-C grants process is moving towards completion for this fiscal year. No official announcements are available, as you know, until the appropriate Congressmen and Senators have been notified; but I understand that final negotiations are under way and I am pleased to note that approximately 27 ARL institutions are involved in those negotiations, though I do not know who they are.

A bill to reestablish the National Archives and Records Service as an independent agency, a bill which, as you know, has had ARL support as well as support from a number of scholarly societies for a couple of years, is now making its way through both Houses of the Congress. The Senate committee issued a favorable report on its bill, S.905, and National Archivist Robert Warner told me yesterday that it is possible that the Senate may vote within the next day or two on this bill. The House committee is also making progress with the bill, and chances are fairly good that we will see the Archives return to independent status within this session of the Congress.

I wish I could give you as good news about the reauthorization of the Higher Education Act, but things are so confusing on the Hill on the terms of HEA authorization that I am going to leave my written statements stand and not say anything more about it, because anything I say will only confuse the issue further. 1985 appropriations hearing on the Higher Education Act will begin, I believe, during the week of May 8, and a number of organizations will be presenting testimony. John Vaughn, from the Association of American Universities, told me yesterday that Robert Rosenzweig will present AAU's testimony and will concentrate on three areas of HEA appropriations, one which will be the library programs. We are very glad to have that support.

The National Endowment for the Humanities appropriations hearings were very interesting this year. I went to the agency hearings and Representative Sidney Yates (D-IL), who chaired the meeting, took a very interesting tactic. As each official presented his part of the Administration's budget, which was a reduction over the previous year's budget, Congressman Yates would lean forward after the presentation and say something like, "Are you sure you cannot spend more money than that?" We all came away feeling very good about those hearings.

Library of Congress appropriations hearings have also been held. Susan Martin of Johns Hopkins University testified for ARL before the House Legislative Appropriations Committee, and she and Carolyn Harris, who is the Preservation Officer at Columbia University, presented testimony at special hearings before the Senate Rules Committee on the proposed legislation to authorize construction of an LC mass deacidification facility in Maryland.

My written statement includes reports on the National Library of Medicine hearings and the National Agricultural Library hearings.

Several years ago, the ARL Board agreed that the Executive Director should let the membership know as early as possible what the budget for ARL would probably look like for the forthcoming year. We had a good discussion of this on Wednesday afternoon, and I believe it would be very useful if we can get to a point where we can predict a level of increase over the next few years. At this point, we are strictly guesstimating, as the economists say. With that in mind, it looks like—for the term of the plan at least, until June 1988—dues increases will range between 4 and 7 percent, approximately. That is about all I can say about it right now, as it is still early in the year to do anything more than a preliminary budget.

I would like to conclude today by saying a word about ARL as an organization and then thanking some people. The effectiveness of an organization like the Association of Research Libraries can be measured, in part, by its capacity for interesting outside funding agencies in projects of importance to its membership. In 1982, ARL attracted $255,140 in grant funds from external agencies. In 1983, the

amount was $402,440, an increase in one year of 58 percent in funds received from foundations and government granting agencies. I believe this reflects, at least in part, a perception by the foundations that ARL's programs and projects are of importance to the community.

Since my report to the membership last October, the Association has received financial support from a number of funding agencies, and I do not think that they have ever all been mentioned at one time from the podium. I would like to do that this morning. The organizations are: the Council on Library Resources, the Xerox Foundation, the General Electric Foundation, the National Endowment for the Humanities, the Andrew W. Mellon Foundation, and the Eli Lilly Endowment. For their sustained recognition of ARL's key role in support of scholarship and research, these agencies deserve our gratitude. For their friendship, support, good advice, and continuing interest in the cause of research libraries, I would like to take this opportunity to render personal thanks to the program officers and executives of all of these foundations. Working together, ARL and our partner organizations have laid the groundwork for important cooperative programs in bibliographic organization, collection development, and preservation in the research libraries of North America.

The greater part of the task, as we all know, lies before us; but the willingness to continue to share the responsibility is a sign of great hope for the members of ARL, for their parent institutions, and for the scholars, researchers, and students that our collections and services support.

Preservation Panel

MR. SMITH: The next item on the agenda is a preservation update panel. The panel members are: Margaret Otto, Deanna Marcum, David Stam, Harold Billings, and Warren Haas. Without further ado, I will turn the podium over to the panel and Margaret Otto, chair of the ARL Committee on the Preservation of Research Library Materials, who will serve as moderator.

MS. OTTO (Dartmouth College): Before we move forward to the panel discussion, I would like to take this opportunity to fill you in on the activities that the ARL Preservation Committee has been involved in over the past year. Shirley mentioned two activities—the guide, which is being prepared, and the survey, which I am sure all of you will respond to and share your information with us.

An additional activity that the Preservation Committee has been working on has been the development of "Guidelines for Minimum Preservation Efforts in ARL Libraries." With the assistance of David Weber, a draft of the proposed guidelines has been prepared. The committee reviewed the document at the ARL meeting last October and believes it represents a useful and reasonable approach. As the next step toward possible adoption, the document was shared with ten additional ARL directors and their staffs. Comments and recommendations for preservation were solicited and have been reviewed by the Preservation Committee this past week. When the proposed revisions are incorporated into the document, the committee plans to transmit this proposed guideline to the Board and, in turn, to the membership for review and, we hope, adoption.

Another area we are actively working in is an attempt to prepare a possible cooperative preservation program for ARL libraries. Nancy Gwinn was commissioned by ARL to prepare a think piece, or talk paper, on this subject. The document has been prepared and will be reviewed by the Preservation Committee at a special meeting this coming June.

Now I would like to turn to the major focus of discussion this morning, and that is the paper prepared by the Council on Library Resources, which all of you have received (see Appendix B). The panel discussion will take place in several parts. First, Deanna Marcum of the Council on Library Resources will review the CLR activities leading to the current paper. The concepts of the paper will be discussed by David Stam of the New York Public Library, and Harold Billings of the University of Texas Library; and last, but not least, of course, we will have a status report from CLR President Jim Haas.

Remarks by Deanna Marcum

MS. MARCUM (Council on Library Resources): This reminds me a little bit of my training days with OMS. On the last day of the program, we always had something called re-entry. We wanted to remind people that even though they had a wonderful time, there are lots of problems waiting for them back in their libraries. After you have heard about technology and what it is going to do for you, we are going to talk about preservation. The Council has had a historic interest in preservation, and all of you know that better than I do, I am sure. I am not going to go through the long list of things that have been done up to now. I do want to point out why we are taking preservation up at this time.

At the ARL Meeting last October, we talked about the Wingspread Conference and the Wye Conference. Those were a result of a joint Association of American Universities-Council on Library Resources effort to look at the problems of research libraries. One of the first AAU/CLR task forces to be formed was on preservation, with David Stam as the chair. From those task force reports, there were wide discussions on those topics. And at the end of that first forum at the Wye Plantation last October, involving university presidents, scholars, and librarians, a strong recommendation was made to look more closely at resources in preservation.

At that time, the Council was asked to take the lead in drafting some kind of strategy for addressing the massive preservation problems faced by libraries. It is important to clarify the Council's role in this. It is not that we are taking this on as a program; rather, we see ourselves as a catalyst for this project. We have started by bringing together a small working group to look at how this strategy might be accomplished. Following the Wye Conference, we asked Harold Billings, David Stam, and Margaret Child to meet with us and begin to put together the first draft of a paper. The work done to date, you have in your hands: the paper that was sent to you prior to the meeting. The kinds of discussions that went into the formulation of that paper will be related by Harold and David. As a next step, following this discussion, the Council has agreed to host a committee to establish the directions for a cooperative preservation strategy.

Jim Haas will talk about the composition of that committee, but I want to talk a little bit about why we are taking this particular approach. We see preservation as an area that is involved with all the other activities that we are undertaking at the

moment. We want to look at preservation as a cooperative project with access. We believe that the time is right for using technology to preserve text and at the same time develop a mechanism for providing access to that text. We want to make sure that the proper research is done to find out if that is, in fact, feasible, if it is cost effective, and if it will work.

We have started some preliminary research projects. We have commissioned some research reports, the first of which will take a look at optical disk technology for purposes of preservation. The committee will also work with this dual need in mind, because we believe that in the end, the cost of preservation will be justified only if it has made accessible the large bodies of scholarly materials that are not now available. So we hope with that approach, we will make some progress on this very important topic.

Now David is going to talk about what is behind the paper.

Remarks by David Stam

MR. STAM (New York Public Library): Harold and I are not really going to talk about the concepts in the paper. You have it. You may or may not have read it. It is there for your reaction. I am going to make a few general remarks, and Harold will follow with a few more specific remarks on the paper and the prospects.

A number of years ago, I heard of a radio description of a bank robbery in which the radio announcer said that the would-be robber gave a note to the teller saying, "Hand over $30,000 or your life will not be worth the paper it's printed on." As I thought about that over the years, I have realized that the robber was a preservation officer looking for microfilming funds.

Despite that metaphor and despite the sense of impatience that many of us have had over the years that things were not happening quickly enough, it is becoming more and more clear that a great amount has happened in the field of preservation since Jim Haas' report, Preparation of Detailed Specification for a National System for the Preservation of Library Materials, was issued by this organization in 1972, since the Library of Congress National Preservation Program, Planning Conference, in 1976, and certainly since the time that I joined the ARL Preservation Committee around that time. Let me just give a few examples. In 1977, after that LC conference, there were a few meetings of an ad hoc Advisory Committee to the National Preservation Plan. They were fairly abortive meetings. That group made one strong recommendation to the Library of Congress, however, and that was to automate the National Register of Microform Masters. We agreed: do not worry about the past; you have to start somewhere and get going. I believe Bill Welsh would agree that, at the time, the answer was rather unequivocal: "We cannot put that at the top of our list. We cannot do that right now." I believe Bill would agree, too, that times have changed; that the automation of the NRMM is now a commitment of the Library of Congress, and I believe it reflects some of the progress that we have made.

Obviously, the awareness, not only among ourselves but in a much wider community—especially the scholarly community—of the problems of preservation has increased dramatically, although the CLR paper goes on to say that preservation again has to be a major preoccupation. We certainly have had the attention of a

wider element of the scholarly community. Recently, both Shirley and I attended a meeting of the National Humanities Alliance, which has been canvassing a number of scholarly groups, learned societies, and organizations interested in the humanities, to find out what concerns and priorities in the humanities are. All over the place, at the top of the list, was preservation as an element of access to scholarly resources. We now have, which we did not have ten years ago, a school which is training excellent people, leaders in the field of conservation administration. I can say that from personal experience, because my institution hired half of the first graduating class, and they are exceptional people.

As Margaret has indicated, there has been a lot of activity in ARL related to preservation, including the NCIP conspectus work, which we believe will have some impact, over time, on the cooperative elements of our preservation endeavors. International attention, too, has increased dramatically. Britain is following some models that we have started in this country. It is imitating some of our mistakes, as well as avoiding some others. IFLA is becoming more active with new funding in this area. Even in Japan, where there has not been much consideration of preservation, there is new interest.

The gist of all this, in my opinion, is we are really on the verge of a breakthrough in preservation activity. Jim Govan, a former member of this committee, referred to preservation the other day as "that old war horse." I challenged him about that. I guess the message is that it is a war horse that is finally ready to go to battle. There are a lot of encouraging signs regarding funding; I believe Jim will speak more about this. LC has had growing success in attracting funding for preservation and related activities. There are model legislative programs developing; they have not been enacted yet, but in New York and, I believe, California, we have prospects of further legislative support.

One of the most difficult questions we are going to have to face—I should not say one of the most difficult but rather one of the tricky ones—is what role ARL should play in these developing programs. I honestly do not know what the appropriate role should be, whether it should be a very active agent in the heart of national preservation development or a more passive role, that we have sometimes played, of encouragement and cajoling of various groups.

That describes my role within the Preservation Committee, I have to confess. I do know what role the membership of this organization has to play. Every one of us is supporting the efforts with words, actions, and funds. Frankly, we have a problem if scaled up funding and its distribution are made into political issues. At the risk of sounding both naive and self-serving, I have to say there can be no room for fragmentation or in-fighting over these issues; and especially, we must not split up our group with the interest of the large libraries with immense preservation problems separated from the smaller ones with relatively smaller problems. It is obvious to us, at least, and it is an assumption of the paper, that leadership in moving to wider funding and action in preservation has to come from the larger libraries, possibly on a regional basis, but both regional and nationally from those large libraries which have the biggest problems. They, therefore, have the biggest responsibilities to do something about it. I would plead with you all to help us with your support and not fragment the efforts with petty squabbles or jurisdictional disputes. Our common ground is support of research and scholarship. It is not only the libraries and librarians who will lose if we fail, but the entire world of scholarship—and that world is beginning to realize it. For example, these massive programs of retrospective conversions represent more and more titles which are no

longer usable.

Two caveats or concerns I have, very briefly. One of the assumptions of the report is that we have to develop a basis of selectivity. No one that I have talked to claims that we have to save it all. I should not say that—I have met one or two conservators who believe that. But no one who is party to these discussions believes that. This will become a very difficult issue as to just what we do have to preserve and what mechanisms we will find to make those selections. I believe Jim will say a little more about that.

The current work has really emphasized content preservation. I am beginning to fear somewhat—and I have not confessed this to my colleagues—that we face the danger of ignoring the area of physical book restoration. We have in our collections, as I learned anew from a recent visit to Iowa, many remarkable physical objects that need a lot of preservation work that cannot be simply copied through microform or other formats. We are going to have to pay more attention to that issue as we go along.

Those are my general remarks. I would like to turn this over now to Harold Billings.

Remarks by Harold Billings

MR. BILLINGS (University of Texas): As I have been sitting here, it occurs to me if I were to make a title to put on a paper that addresses these concerns, I might head it "The Reluctant Bride," or "Whose Arm are We Going to Twist to Take the Leadership in Preservation Efforts?" I believe we have a bride at hand, and that it will become clear who that bride might be. We ought to seize that opportunity.

I want to mention several concerns that present themselves in the program proposed by the CLR paper. At this time, the urgency of the preservation issues is such that a detailed critique of the paper seems to me not as important as an understanding of some of the concepts of the strategy. I have one overriding concern; that the Council must be supported in this initiative and urged to continue a leadership role—specifically, as host in bringing together a committee or group of some kind to proceed with the further development of a national strategy for preservation. I suspect, in many ways, this might be called a North American strategy for preservation.

The Council has shown some reluctance in pursuing this role, though a number of librarians, scholars, and university administrators, at Wingspread and Wye and other occasions, have urged its leadership. It seems clear the Council can serve as a catalyst, a coordinative body, as a flag of credibility for many scholarly organizations, foundations, and other agencies which are needed to support a national preservation strategy, and as a well-practiced and successful agency to stimulate the large amounts of funding required for such a program.

The second major concern and chief concept of the plan must be the development of a mechanism to see that the concerted effort is carried forward. I would urge that the concept of the formation of a committee or group be supported to help develop the next steps of the national strategy. It should also serve as a unified and unifying voice, rather than a babble of interest. That mechanism should

be an early consideration of this umbrella advisory group. The call, however, must be to action, not to planning.

The role of the ARL membership in such an effort seems to me obvious—and major. Work on the ARL five-year plan for preservation must be a natural part of the national strategy, including, as Margaret noted, the mention of the cooperative preservation program for ARL which will review the development of minimum preservation guidelines for ARL libraries, the preparation of a guide to preservation microfilming, the carrying forward of a number of microfilming projects, and, perhaps most importantly at this time, the ARL survey of preservation filming needs and activities. It is imperative that we have more information about the many efforts that are already under way in the area of preservation. Information recently developed by the Library of Congress about the condition of its collections should shed significant new light on the problem, and can be helpful to all of us.

Individual institutions must also be encouraged to continue their present effort and to raise their levels of those efforts. Within the context of how those activities support not only local needs, but the national collection as well, it is important—in fact, I believe it is critical—that individual institutions or organizations not be threatened by the development of the national strategy, but rather sense a new outline in gaining support and funding through their own efforts and local needs.

I would expect that the concept of regional production facilities might be questioned, but the concept should be viewed as an assurance that no library in need should be without access to high production/cost reduction facilities. The nature of these geographically-dispersed facilities might vary from substantial in-house library efforts to models along the lines of the Northeast Document Conservation Center. Such efforts should be carefully planned and nurtured, but no area should lack an appropriate facility.

The close ties that must be developed among major research agencies, our national libraries, and other sectors, have been well-defined in the CLR paper. I would like to reemphasize the concepts of the fullest possible use of the commercial sector, varying from such activities as preservation microfilming and the use of jobbers to the possible encouragement once again of major reprint programs.

While the CLR paper affirms that the "computerized bibliographic" system to support preservation is essentially in place, the fact remains that there is still much to be done. The Research Libraries Group preservation identification program is to be commended. The OCLC Research Libraries Advisory Committee recently reviewed recommendations from OCLC as to how to incorporate preservation information in that database, but rejected those recommendations because they represented a nonstandard solution and should not be implemented until they could be made to correspond to other systems. We should all insist that cooperative efforts to produce the standardized means for recording preservation information be developed for linkage, exchange, or point of common entry as soon as possible. Like it or not, we are all going to have to reacquire significant numbers of our holdings on an ongoing basis until some uncertain time. Selection will be difficult. The process will change, and it will be expensive. One of the most critical resources we need is time. New strategies will arise. Many of us, for example, may find that we have to give up the open stacks that delight our scholars. In the meantime, our national collection continues to disintegrate.

The CLR paper represents a practical approach to developing a strategy for

addressing with these issues. It will work. ARL's role in it is important. I hope we will support it with both self-interest and statesmanship.

Remarks by Warren Haas

MR. HAAS (Council on Library Resources): The intent of this meeting, as you know, is to hear a little bit and take advantage of the opportunity to talk among ourselves. I want to limit myself to bringing our paper up-to-date.

In the three weeks since the paper was sent for distribution, a number of things of importance have happened. First, a week ago last Monday, I spent the day with the Association of American Universities. For the first time, to my knowledge, AAU dedicated a major segment of its program to the subject of preservation. Robert O'Neill, the President of the University of Wisconsin, Sheldon Hackney, the President of the University of Pennsylvania, and I constituted the panel that got the discussion going. I did, in a sense, some of the things that David just did. I gave them a snapshot of what has happened in recent years, paying special attention to the progress the Library of Congress has made in the application of some of the more recent technologies for preservation purposes. What we tried to do most of all was give them some sense of the magnitude of the job to be done; that is not really a problem. I also tried to say something about the cost, specifically about dealing with those publications on library shelves that are physically either gone or very close to the point of being nonsalvageable by replication. We really do not know what the answer is. I used, as a round figure, a hundred million dollars plus or minus 100 percent. Then I went on to talk a bit about the nature of the responsibility. Here, you would be proud, I think. A number of you must have done a good education job, certainly the evidence was also strong at Wingspread and Wye. They comprehended quickly that this national problem of preserving our recorded heritage is something that universities cannot properly ignore. It is a part of what a university is all about.

The discussion is what fascinated me. A large number of the presidents stood up and talked about why this was important. They were looking for ways to think through the funding process. They were asking questions about what the implications are for space requirements over the next decade or two in our libraries. They grasped very quickly the idea that preservation is not an only important end; but perhaps from the point of view of society, it also may be the technique by which access to a growing portion of important material can be assured for the public at large.

In essence, the meeting was a great success. I can, with full confidence, say that AAU as an organization and a great many of the presidents of those member universities are not only understanding, they are supportive. With regard to funding, I said that it was our sense that at least half of that money, whatever the amount is, would have to come from federal funds. A portion, a modest portion probably, would come from private foundations and the institutions themselves—an obligation here to contribute dollars over and above what they now provide for their libraries. There was no argument. A number of presidents in the meeting understood precisely, and what they are waiting for are the specifics so that they can begin the long-range financial planning required to meet their obligation. They see it as their obligation. I think you should know that that session two weeks ago took place and the presidents that were there—there were 40 or so—were, on the whole, well

informed.

Let me move to the next item. The paper mentions the Council will help bring into being and host the group of people to take this enterprise the next step and to move it there quickly. Our plans are not firm, but what we have in mind in the discussions we have had with a number of people is that we will put together--I hope by July 1--a group of representatives from the scholarly community, from libraries and archives, from university officers themselves, and from foundations. This short-term committee that will assume the responsibility of carrying the planning process on further, of identifying and working very quickly on the long-term structure requirements for moving forward in a constructive way and monitoring results, which is equally important, to commission the research that is required and to capitalize on the research that has already been done, and to, in effect, help establish the specifications for the system itself that will be needed to preserve our collections. The first forum talked in terms of the library. Each library is a critical element of the scholarly capacity of this country. From the point of view of scholarship, the long-term well-being of productive scholarship, it is the aggregation of research libraries that is our national wealth. In a sense here, what I think we see is perhaps an articulation of that concept of the library; that is, whether it is centralized or decentralized does not matter in the least, but an accumulation of preserved materials that over time will become, in a sense, the substance of the national heritage.

We plan to set this committee up, as I say, by early July. Margaret Child is going to join the Council staff as a consultant, part-time for the next six months, to provide continuity and staff direction for this committee. We are also beginning to work with the scholarly community itself to bring them into the act. In the long run, the presidents asked, does this technology and preservation effort mean that we will no longer need to build buildings? I protected you. I also said that should have an influence on the space the library requires over time. That influence is going to be governed more by the support of the scholarly community as a faculty and how it is going to be governed than any other aspect of the program.

Deanna and I are meeting with the American Council of Learned Societies (ACLS) Board of Directors and the executive committee of the Conference of Secretaries of ACLS in May, and preservation is on that agenda. The question is how can we bring the scholarly community along to accept the changes in the way they work and the character of their collections--and that is really implicit in much of the technology and much of the prospective preservation effort itself.

One other thing I should mention, both in talking with university presidents and staff at the National Endowment for the Humanities, there is receptivity to this effort within the Endowment. Maybe the way to go in terms of federal funding is to get the Endowment to formalize more than it has its so-called preservation line in its budget, and to find a way to provide continuity of effort and substantial amounts of dollars payable to libraries through the NEH preservation program. We are talking maybe $10 million a year for ten years. Those numbers do not frighten people, given the magnitude of the job to be done and its ultimate importance.

I would like to report is another sign of progress during the past three weeks. Probably in another week or so, we will be able to announce that funding is in hand to build another major regional facility; that funding is in hand to cover the costs of this planning effort, to cover the costs of the research that is required, and to cover the cost of a public information program that many people believe is essential in

order to build a sense of public support, not just among librarians and archivists but also among those who comprehend the importance of libraries and archives in pressing for federal funding for this purpose. By and large, that money is in hand. It cannot be announced yet for reasons of protocol.

In a sense, a lot has happened since Wye. The first segment of a plan is developing. There is visible support from many sectors of the academic community, and the prospects are real that some of the money needed to actually get going, and preservation instead of planning is around the corner. And that corner is not far from where we are standing.

Discussion

MS. OTTO: Does anyone wish to comment?

MR. McDONALD (University of Connecticut): I have a question, Margaret. As all of you know, the AAU is just a subset of the group represented in this organization. I am wondering whether plans are afoot to reach a somewhat larger group of university presidents through national associations, state universities, and land grant colleges for one, or any other such group, so that the impetus that has been gained here could be more widely shared.

MR. HAAS: John, we are sort of living from day to day on this one. It is obviously important. I would assume that this next iteration of the committee, moving ahead in a public information program, would put that high on the list. We will try.

MR. SHANK (University of California, Los Angeles): The panel—right on! Finally, Jim, your fingernails can take a rest. You have been hanging on to this for quite awhile.

The University of California has been working to develop its libraries under the umbrella of a plan promulgated in 1977. It has been very successful. Seven of the nine campus libraries are represented in the Association of Research Libraries. But the plan had a gap, which was soon noticeable—the preservation gap. We have a plan for uniform catalog, for remote location storage facilities, for improving the book fund budgets of the campuses; but the preservation item was, relatively speaking, missing. We talked a bit about purchasing microfilms or doing filming as part of the library budget, to provide filming in order to save space. Through the kind efforts of the UC Berkeley campus, Barclay Ogden put together what could be considered an additional chapter of the plan on preservation. It was negotiated through the Library Council of the University of California. It has the approval of the chancellors of the campuses, most of whom wrote to president David Saxon to support this chapter. It has the approval of the regions, and it is just waiting the right political time to be introduced into the legislation to try and get funding.

While at first I was a little dismayed that they did not rush right into the legislation to get the money, it is a significant number of dollars for a preservation plan for the nine campuses. I believe it is more indicative of the great support the university wishes to give to this. They did not want to rush in. It was probably something that would get thrown out because of the political and physical problems of the state. They are waiting for the right time so they can go to the legislature

with the reasonable guarantee of success of getting this money. I am not sure if I can speak for the officials of the University of California as to whether that chapter can be shared. I believe it is worth looking at. If you have a way of doing so in your committee or planning effort, I would urge you to do it. There is hardly a thing that Barclay Ogden overlooked in the preservation effort: some ideas for creating regional facilities rather than doing everything on the nine campuses, the ideas of buying film, of making film, of doing research, of having training, and so forth.

So I repeat again to the panel, I believe that the UC chapter plan will fit what you want to do, will support your goals, and probably can use some of your support in return. When it gets to the legislature, that last bit of arguments, if there is any, can be knocked down so we can build our West Coast operation.

MR. PAULSON (New York State Library): New York State has proposed legislation this year to provide $3 million for library preservation. That is part of a comprehensive library bill presently being considered in the legislature. The money would be distributed in part to the 11 major research libraries in the state, part of it in a competitive grant program for which those research libraries would be eligible, then another part to other research collections in the state, again, in a competitive grant program.

I mentioned that because, first, I want to congratulate CLR on its leadership here and in the program and the document that we have this morning. It appears that a number of things may be coming together that will allow us all to move forward. I am pleased with what Russ Shank has just reported, and with the CLR program, and I hope that you will soon be hearing that New York has adopted its program. I am optimistic about the legislation, about the package as a whole; it looks very good for its passage. The preservation program may not be funded at the amount requested, but the establishment in principle of that kind of funding is a very important step forward.

I would like to raise for Jim's consideration and for others who are going to be working with the CLR program, something that I did not see highlighted in the document, though it may have been referred to obliquely. That is, a lot of the content preservation is probably going to mean the aggregating of materials into collections or sets—microfilm, microfiche, optical disks. We are all probably involved in such aggregation. I hope that in that process there is a close tie and a consideration of providing the bibliographic access to those materials. The document refers to the fact that the computer base systems are in place; but one of the big problems in the past and one of the things we are tackling in another arena is the retrospective cataloging of large microform sets. As we go forward with preservation activities, this is an opportunity to prevent that problem in the future. I hope that will be taken into consideration.

MS. OTTO: Anyone else wish to comment?

MR. WELSH (Library of Congress): I would like to go back to a point that David made about the whole question of preservation. I believe we really have addressed or probably partially solved the problem of technology. The great problem is what can we or what should we save. I was reminded a number of years ago of a fellow bureaucrat who decided to create a library. In due course, he, in fact, assembled 675,000 volumes. Fortunately or unfortunately there was fire and those buildings and those collections were destroyed. I say fortunately or unfortunately because it is not clear. Unfortunately, because we lost a great part of our classical heritage.

Fortunately, because if we had not had that fire, every square inch of Egypt would now be occupied by the Alexandria Library.

This is one of the great challenges. What are we going to save? Where are the great collections going to be kept? The bibliographic apparatus is going to be absolutely essential and we must have that in place. Even with Harold's reservation, I believe Jim is right. We have come a lot farther along that line than I believe we are aware. Even the REMARC database will be available to us in July, fully available to us. We must make sure that that database is available to everyone.

MR. LAUCUS (Boston University): I would like to make the following motion. I move that the Association of Research Libraries support the initiatives taken by the Council on Library Resources to create the capacity for taking action for wide-scale preservation of research materials in North American libraries and endorse the establishment of a pro tem committee to bring together the parties necessary for the development of solutions for the entire scholarly community, with appropriate representation by and appropriate liaison with the membership of the Association of Research Libraries; that the Association of Research Libraries offers its fullest commitment in supporting and participating with the activities of the Council.

MS. OTTO: Thank you. Do we have a second?

A MEMBER: Second.

MS. OTTO: Do we have any discussion? If there is no further discussion, all in favor, please signify by raising your hand. Is anyone opposed? Excellent. Passed.

MR. HAAS: I want to say one thing, one thank you. I want to underscore what Deanna said. This preservation enterprise, this phase of this generation of preservation enterprises—no single organization is capable of resolving and carrying out this important, absolutely essential piece of order. The Council is helping. It will do its level best, but it is going to require—as both David and Harold said—a kind of enthusiastic altruism and hard work by everybody who sees their responsibility. We will push for awhile. At some point very soon, I would hope that something would come into being that would be the country's agent for preservation, not the Council, not ARL, not the Society of American Archivists, but a visible national evidence of a kind of cohesion of the responsibilities of higher education and libraries to the long-term interest of society. That is really what we are trying to start here. You have joined in the task. Thank you.

MR. PETERSON (Southern Illinois University): I want to express my appreciation for the reports and particularly for the work of Mr. Haas and the Council, and to say that in addition to the work that Russ reported from California and that Peter reported from New York State, the Midwest is also interested and making progress in the area of preservation and conservation.

We are very indebted, initially, to the Council for a grant which helped us to get our conservation program started about seven or eight years ago, to develop what we believe is a fine lab and give us the basis for starting the Illinois Cooperative Conservation Program, which is now in its fourth year of operation. We have received successive grants from the Library Services and Construction Act, funded through the Illinois State Library for this purpose, and the program has been essentially educational and consultative. We have had a trained staff. We have, at the present time, a graduate of the Columbia program on our staff who is working

with us. The program has been recently expanded to the Midwest Cooperative Conservation Program, which includes—in addition to Illinois—Kentucky, Tennessee, Indiana, and Missouri. We are holding workshops. We are now expanding staff in our lab to provide some treatment of materials from other libraries in addition to our own materials.

We have been very successful with workshops. We have brought groups in to our lab. Elaine Sloan had a group that worked with us for hands-on training and for educational training. We have developed some model statements, and we have a conservation/preservation newsletter to which any of you can subscribe.

I believe that while we have accomplished some excellent things on a state-wide and a regional basis, I strongly support the efforts the Council is making. If we can bring together some of the very positive activities that have gone on in areas like Illinois, New York, California, the Midwest, and the other areas, into a national program, whether it be a federated or a confederated program, or just a cooperative and coordinated program, I believe we will definitely move forward in this area. We are tremendously encouraged and want to add our support to these efforts.

MR. DE GENNARO (University of Pennsylvania): I want to pick up on the point Bill Welsh just made about the forthcoming availability of the REMARC database, and to wonder outloud in this context where there is a good deal of enthusiasm for cooperative endeavors. This might be an appropriate time, perhaps, to get the REMARC database into the public domain as part of the preservation effort and the bibliographic control of preservation. It seems to me the amount of money we are talking about for bibliographic control, in comparison with the overall preservation effort, might make it a feasible thing to consider now. Bill, would you have any comment on that?

MR. WELSH: We tried this once. We did not succeed. We were trying for a slightly different purpose. I am now quite optimistic that if we go back again, we will have more success. To allow a number of libraries to be online to that database, I believe, is a possibility. If we tie this to preservation, we might have a different handle than we had earlier. Jim, what do you think?

MR. HAAS: I am willing to try. Where is Lee Jones? Is the study of retrospective conversion being done by Dorothy Gregor and others pertinent here, too?

MR. JONES (Council on Library Resources): Probably. That report will be available, I believe, in another six weeks and will be shared with this group.

MR. HAAS: It is described in Lee's report to the ARL (see Appendix C).

MS. ECHELMAN (Association of Research Libraries): There are a couple of other activities worth mentioning here. One of them is embedded in the Council's report, but I believe has not been given enough emphasis in this discussion.

A very important factor in North American strategy for preservation is the continuing regular sharing of information among the national agencies that are involved in preservation. One of the things that the planning committee has put in the report, and I believe is a very important part of it, is to establish a mechanism whereby the National Archives, the National Library of Medicine, the Library of

Congress, and the National Agricultural Library share information about what they are doing. There are a number of reasons for this. Some of them are obvious. One of them, which may be less obvious to those of you who do not live in Washington, is that a considerable amount of redundant effort takes place in the federal government, simply because the government is so large and the mechanisms for sharing information on an interagency basis are not all in place. I would like to see that effort extended to the efforts that are being made in Canada by the public services and the National Library of Canada, also.

The second effort that is not mentioned in the Council paper but is under way, is that ARL on behalf of its member libraries and through the Office of Management Studies, has made an application for funding to the National Endowment for the Humanities to expand the preservation planning program which was so successful in the last couple of years, so that 10 additional libraries in the ARL group can do the necessary planning for institutional efforts in preservation. We have not heard a final answer from the endowment, but the proposal is under review, and we hope to hear within the next couple of months.

MR. WELSH: Can I ask Joe Howard and Bob Warner to stand up and say yes, we are agreed? We need to do that. This morning when Deanna was making her report on research into the optical disk, and I was reminded that some day next week I am going to be interviewing an optical engineer. There is an awful lot going on. We need to exchange information.

MR. SMITH: Thank you all very much. That is an extremely positive and eminently promising initiative that is under way.

Report on the CLR Economics Seminar

MR. SMITH: The next item on the agenda is a report on the CLR Economics Seminar by Richard Talbot and Jim Haas.

MR. HAAS: This will be very brief. I am here really on behalf of Martin Cummings.

It was reported at the ARL Meeting in Chapel Hill last fall that the CLR Economics Seminar was soon to get under way. The Lilly Endowment provided funds for the Council to move quite heavily into the subject of the cost and funding of research libraries. Martin Cummings has joined the Council staff to head the project. He is already hard at work and has been talking with a number of people. Two meetings of the Economics Seminar—we try and retain our academic image—have been held this year. At the last one, several people took part, including: William F. Massey, Vice President for Business and Financial Affairs at Stanford University; Billy E. Frye, Vice President for Academic Affairs and Provost at the University of Michigan; David Breneman, President of Kalamazoo College and one of the country's leading economists of higher education; Lawrence White, Professor of Business Administration at New York University; Malcolm Getz, Director of the Vanderbilt University Library, who is here; and Paul Kantor, President of Tantalus, Inc.

The intent here is to learn more than we now know about the cost of libraries,

with the object of helping librarians think through what it is they can do to help university officers and the scholarly disciplines themselves to understand the cost of certain decisions, and to explore alternate approaches to funding. While there has been a fair amount of work done in this arena in individual libraries, there have not been an awful lot of comprehensive and useful results. Fritz Machlup collected a great deal of information about library costs. William Baumol in 1972 did, with CLR funding, did the first major work on the economics of research libraries. In a sense, this effort is starting from those points and moving forward.

A number of studies will be commissioned to carry out the research in specific areas. Malcolm Getz is already to work and will continue working with Martin to identify certain kinds of information required on a continuing basis in order to sophisticate our long-range analytical techniques so that the process of management might be better informed. Paul Kantor is going to do some work for the seminar, collecting specific cost information in a small set of libraries and then using some sophisticated analytical techniques to look for the meaning of that information. He is also going to spend a fair amount of effort working with a few libraries to think through their relationship with a variety of external organizations, ranging from bibliographic utilities to shared resource centers to regional affiliations trying to understand better how such organizations can influence library performance and library costs, trying to help libraries think through how they can realize the full benefit from participation and, in a sense, build our sophistication. As a result, over the next 20 years as these interrelations of all of the components of scholarly communication come into being and are shaped by forces within and without the university, the university will have effective ways to help shape its own future rather than having to rely on the whims of the marketplace; because we all know by now there is no one-to-one correlation between what is important and what is salable.

I believe perhaps what Marty would ask me to say more than anything else is to express his gratitude to the Committee on ARL Statistics, chaired by Ted Johnson, for their willingness to listen quickly and act even more quickly to extend some of the data gathering efforts of ARL to a limited set of libraries, initially, to begin to explore new kinds of information that will be useful for management purposes in the long run.

With that, I would be happy to answer questions. The purpose here is a very brief report. Richard Talbot has taken part in the discussions from the beginning and has contributed to them, and I will turn this now over to him.

MR. TALBOT (University of Massachusetts): Thank you, Jim. I am really not going to belabor the points Jim has made. As I was listening to the presentation of the preservation panel, it occurred to me that one of the things that was said about the importance of preservation could be said about this issue as well. We need very badly a framework in which we can think about these problems, both at the local level and then in terms of this fuzzy system in which we all exist. If we are serious about the notion that a significant majority of the library resources in North America are pretty much summed up in the libraries in this room, then we need to think of the system in a more defined way, so that we can begin to make more realistic allocations of our resources. If we are very lucky, we might get an understanding of how we can go about that from some of the work that is going to be done as a result of this seminar.

Of course, the really important thing about these seminars, and the studies

which will support them, is whether you will be able to learn from them, take advantage of them, use them. In a real sense, this work will depend on your cooperation, initially with the smaller groups that Jim has mentioned and later as a collectivity. I hope that we can bring reports to you in October on what has been done and that perhaps we might, if the process matures to a certain point, devote a meeting next spring to this topic, not just in a programmatic way in the sense of having panels, but in more intensive discussions as well.

That is the kind of thing I believe we can hope for and anticipate. This measures very nicely with the ARL plan and the activities of the Statistics Committee. I am not going to go on about this. I hope that any of you who have an interest in this will share that with me or more particularly, with Ted Johnson and the Statistics Committee.

I believe the people, the librarians certainly, at these economics seminars, consider themselves as representing you. We would be pleased to hear from you if you have something to tell us. Thank you.

Report from the Committee on ARL Statistics

MR. SMITH: The next item is a report on the performance measures manual developed by the Statistics Committee. Ted Johnson, the chair of that committee, will give the report.

MR. JOHNSON (Emory University): My report is more in the form of a brief announcement. First, though, a comment. I was pleased to read in the preservation paper about this clean and benign environment that the preservation program will develop for all of our research libraries. It occurs to me that one of the by-products is going to be stress management for research library directors.

We were hoping by this time to have in your hands a published manual, Objective Performance Measures for Academic and Research Libraries. We have just the proof copies, one of which has been at the registration table throughout the meeting. This will be going to the publisher very shortly, and we hope that in a matter of weeks it will be in your hands. Each member library will receive one copy free; additional copies will be available for $25 each. I want to urge you to try to apply these measures in your libraries and to come prepared at one of our future meetings to discuss real applications of these measures and how they help to give you a better understanding of what it is you are doing in the library, and how you can use them in your work.

It would also be very helpful if you could work with the performance measures and begin to postulate ways that you can give us in the Statistics Committee and the CLR Economics Seminar program advice and guidance on the kinds of measures that are needed, the additional data elements that you need to tell the story of the library on campus and elsewhere that will encourage our administrative officers to help work with us raising the funds that we really need.

Thus I want to urge you to watch for the manual, to try it out in your library, and to be in touch with members of the committee. The members are: Calvin Boyer, Robert Lee, Gordon Fretwell, Kendon Stubbs, and myself. Let us know your

ideas, comments, and suggestions.

Report on the ARL Microform Cataloging Clearinghouse

MR. SMITH: The next item is a report on the ARL Microform Cataloging Clearinghouse. Joe Boissé will give that report.

MR. BOISSE: (University of California, Santa Barbara): This, again, will be a very brief report. As you know, a major focus of the bibliographic component of the ARL Microform Project has been to survey the members of the Association to find out especially from them who is doing what in terms of cataloging the content of individual microform sets. That project was completed and a second aspect then undertaken was to establish a clearinghouse to provide information to answer questions concerning microform cataloging. In other words, if somebody is considering undertaking a cataloging project, there would be one place they could go to find out if, in fact, somebody else is cataloging that set so they would not duplicate that effort.

The clearinghouse has been proven to be very successful. There have been inquiries from many institutions, and not just members of the association. During the ALA Midwinter Meeting, the Advisory Committee discussed the future of the clearinghouse project. The outcome of that meeting was a motion for ARL to continue the project, and eventually to assume the full financial responsibility for it.

The estimates that we have from Project Coordinator Jeffrey Heynen are that it will not be an expensive project. The annual cost will run somewhere around $10,000-11,000. There is the possibility that some of the money will be recovered from a fee for answering some of the questions that are sent to the clearinghouse. On the other hand, it was the committee's belief that we should not try to aim at complete cost recovery, because many of the queries come from small institutions and it might defeat the project rather than help it. The committee is going to be looking at a combination of factors. In other words, there will be some cost recovery, especially for some of the questions that involve more time on the part of staff.

The committee voted unanimously to recommend to the Board that the project be continued and that ARL assume financial responsibility for continuing the clearinghouse project. The committee's motion was on the agenda of the ARL Board earlier in the week, and I believe Eldred will report on it during his report.

MR. SMITH: Thank you, Joe. I will be reporting on this and other Board actions at the end of the meeting when I give my report, so I will keep you all in suspense until that time.

Report from the CLR Bibliographic Services Development Program

MR. SMITH: The next item is a report from Lee Jones on the CLR Bibliographic Services Development Program.

MR. JONES: I have provided a copy of the most recent quarterly report that we submit to our funding organizations (see Appendix C). It has been slightly modified for your use. It occurred to me that you have not heard and will not find in that report precisely all that has gone on between the last time I reported to you and this time, so I will expand on a couple of things that are in that quarterly report.

Under standards and guides, I want to talk a little bit about the electronic manuscript project. That is a project being run by the Association of American Publishers to create a set of codes for coding manuscripts in electronic form. The purposes are pretty obvious as far as the publishing community is concerned. For the library community, they might be less obvious, given some responses on the part of librarians when they were asked what they thought of the use of such codes. The real use is clearly for information retrieval and information management processes further on down the line.

The first task of that project was to identify what, in fact, has been done in the publishing community relative to using manuscripts in electronic form. That report is substantially complete but not yet released. It will be released probably within the next month or six weeks. The National Library of Medicine took the initiative to form a task force in conjunction with this project to identify elements that would be important for the library and information retrieval world. That work has been completed and submitted to the contractor, Aspen Systems. That set of requirements must now compete with the requirements that have been identified by the publishing community, and some merged set will, in fact, be the result. I anticipate that you will see the merged set of requirements or at least some reviewers in this audience, probably before the end of November of this year.

I would like to shift gears a bit to the item on command languages and screen displays for online services. OCLC and CLR hosted a meeting of 30 people concerned with those two topics. The area of command languages in online catalogs is one that has been identified for the last two or three years as amenable to creating some minimal set of standards; that is, what are the commands that somebody issues in an online catalog. There has been no initiative up until this time to identify such standards, and the initiative did not come from the U.S. in this case, either. It came from the International Standards Organization. That group has proposed a set of international standards, unfortunately not taking into account the needs or requirements of online catalogs, but focusing more attention on the needs of information retrieval systems. They were hopeful about voting and completing work on that standard in early winter. That was postponed for approximately one year, and there is now an effort to put together an ANSC Z39 committee in order to propose the U.S. version of such a standard. Otherwise, we could end up with an ISO standard and have a separate U.S. standard, since we are so much further ahead in online catalog development.

The area of screen displays was simply an exploration of what, in fact, can be done right now relative to standards. It was clear that there is not enough known in this area. The resulting recommendations are that we should take some steps to collect and synthesize what other communities know about screen displays, those communities being insurance companies and banking organizations. You see on television IBM and Wang trying to figure out what appropriate screen displays are. Unfortunately, those organizations are not sharing the results of those studies with anybody outside of their organizations right now. The proceedings of that meeting will be prepared by Paul Peters of Columbia and should be available in July, probably from the Council.

Jim mentioned the retrospective conversion report that we have commissioned. Jutta Reed-Scott and Dorothy Gregor, late of the University of California, Berkeley and now of the Library of Congress, are close to completing that report. Its object is to examine whether it is feasible to put together a strategy for retrospective conversion. The odds are, according to the information I have seen, that it is still not too late, particularly for the larger institutions in this country. Many smaller institutions have already plunged ahead, spent modest amounts of money, and completed retrospective conversion projects. Plans are now under way for organizing a meeting to review that report. This group will be included in that review and will most certainly see the report itself.

Two or three times in the past I have asked this group to help me and the Council generally to identify someone capable of exploring the underpinnings of our bibliographic record structure. The concern is that the basic elements of the bibliographic records structure were identified and aggregated in the last century, modestly altered in the thirties, and we are now in the middle of a computer-dominated bibliographic record system. There are some concerns that structure identified for print on paper environment is not what we need in the long term and the machine environment. We continue to seek interest in the exploration of this topic.

It occurred to me during this meeting that we are raising so many issues that require attention that those that have the capability of addressing this topic have options that are a lot easier to get their hands on. I would still like to find one or more people willing to take a crack at this one. If you have nominees or are yourself interested and feel qualified, I would be delighted to talk to you about it.

The last topic that I want to touch on is that topic called linking bibliographic databases. I remember in Boston when we first talked about this topic, there was considerable interest and some of that interest was dampened in the months that followed. Yesterday you heard some presentations that deal quite directly with this whole link systems project. You heard about the International Standards Organization, open systems interconnection model, and incidentally, my question was not answered by the panelists. I was trying to get them to make it clear that the X.25 standards that are being used can and are being plugged into the lower levels of that seven-layer open systems model. There is a very direct connection between X.25 and OSI. It is not to say X.25 is not the only thing that is being plugged, but it is being plugged into the link system project. You heard the OCLC presentation identifying X.25 as a likely option they will use in their system.

I want to report that there have been successful tests of the first five layers of that system in the Link Systems Project between the Library of Congress and RLIN. WLN is one layer behind and it will probably be another month before they will complete their tests. Layer six is essentially a null layer; nothing is going on in that layer right now. In fact, there is some discussion in the standard-setting agencies to abandon layer six, folding its functions into layer five and layer seven. Layer seven is the application layer, and we will have that test in July. The test will be an exchange of authority records. The recent public meeting, someone observed that it was unfortunate that OCLC has not been invited to join the project to exchange book records. That is exactly the case. They have not, and they have not because there is no project to exchange book records. They have, however, been invited to join the project in all its ramifications; and I understand now that, in fact, they are eager to do so.

There is a bibliographic analysis project—and OCLC has an observer assigned to that project—which is an effort to define other applications of this link system. It will include, I trust, an exchange of book records and OCLC will be involved with the other participants. To that end, that is the involvement of OCLC in the Link Systems Project, we convened a meeting in February with the technical staffs of the link systems project participants and technical staff from OCLC. Policy officers were also included in the discussion; and the result is a commitment on the part of OCLC to find a way to establish a link for exchanging authority records, initially between OCLC and LC. Further, there is a commitment to help sharpen and expand the applications supported by the link development project. That meeting was as positive and fruitful a session as I have been associated with in the Bibliographic Services Development Program and balances some that were conducted early on. I believe there is a fruitful environment right now for long-term commitments to cooperation, something we have all been working on and something that I believe is coming to fruition.

Finally, I would report to you that in January of this year, the Linked Systems Project participants held an open meeting, relatively open, for any institutions that thought they might be interested in implementing the link systems protocols. Twenty-five institutions indicated an interest, and the meeting resulted in an effort to write a document that would be understandable by administrators relative to what the Linked Systems Project was all about and how it might help vendors. The vending community is very much interested in this protocol; they see that as one of the entrees into your library.

Let me conclude by saying the Secretary of Commerce last week made a policy pronouncement, in which the National Bureau of Standards is going further than they have ever gone before in the support of the open systems interconnections model; and there are several very large business projects, one in the automotive industry and one in the office automation industry, to develop applications protocols using that model.

If there are any questions, I will be happy to respond to them.

Report from the Office of Management Studies

MR. SMITH: The next item is a report from the Director of the ARL Office of Management Studies, Duane Webster.

MR. WEBSTER (ARL Office of Management Studies): I want to comment briefly on some of the developmental efforts currently under way in the office. We try to keep you informed about the ongoing services and resources available through our training, self-study, and publication efforts through informational mailings and the ARL Newsletter. Also, I would hope that you have a chance to look at the annual report issued by the OMS and sent to you within the last several weeks. [A Summary of the OMS Annual Report appears in Appendix D.]

The first project I want to talk about is the Public Services Study, funded by the General Electric Foundation. You might recall this is a two-year effort intended to design and test a process that research libraries can use to evaluate and refine their public service priorities and programs. Major emphases in this project are directed

toward encouraging staff to reconsider, rethink, the role that the library plays in the production and dissemination of scholarship information on campus; to examine user relations; to consider the performance requirements of a public service capability in the face of rapidly changing user behavior and rapidly changing technology. Seven studies are supported by the General Electric grant, and all seem to be progressing very well. Final reports are already available from Michigan State University and from the University of California, Riverside. Also at the recent ACRL conference in Seattle, chairpersons from the studies at Columbia, North Carolina, UC Riverside, and Michigan State provided first glimpses of the issues and experiences of participants in these studies.

The study process is proving flexible and useful in that variety of institutional settings. The experience with these pilot studies, as well as reports from the sponsored research efforts that are also being conducted by seven of our members, will help us refine that study process and refine the manual. We expect to have the public services study program, available for use by other members of the Association by the first of next year. If you think you might be interested in using that process, it would be useful to let us know and very useful to talk to the people who have been directly involved in those programs in order to get a firsthand view of how those studies operate.

A second project capturing a significant portion of all our time and effort is the National Collections Inventory Project, which Shirley described earlier. I simply want to reiterate the fundamental purpose of that project; namely, to move from an internal analysis description and evaluation of collections to a more effective, cooperative development of collections on a regional and national basis. Our hope is to be able to take the experience with the collection analysis project and with the RLG conspectus and to be able to make those resources available, along with training support to others in the organization that are interested in using it. Already, Jeff Gardner, who is responsible in this area, is having some discussions with a number of libraries in the southeast and in California.

A third project is the Institute on Research Libraries for Library School Faculty. The institute is funded by a grant from the Council on Library Resources and is the product of some discussions and work of the ARL Committee on Library Education. This is an attempt to influence the character of library education by taking a handful of faculty members more involved in the education process and exposing them to some of the best in thinking and best in experience from research library administrators. We have, with the help of the planning group on this project, selected 12 faculty members who will participate in a three-week institute hosted by the University of North Carolina Library and Library School; and the institute will include seminars on research libraries in their environments, as well as a week-long field experience for the faculty members in the libraries at UNC, Duke, and North Carolina State.

I might also add that during the final week of that institute, we will be asking several of you to chair small group discussions, working directly with these faculty members in the consideration of some of these questions concerning the future preparation of research librarians. If any of you are interested in more information on the development of that project, a list of participants or the description of the field visits or the agenda, panels or speakers, I would be happy to provide that to you.

The fourth project involves more of you than the others. It is the Management

Institute for Directors. The first such institute was conducted in February and 18 of you participated. Maureen Sullivan and I wrote a report on the participant evaluation, which is available. Joe Rosenthal reflected at Business Session I that this was an intensive event. A lot of issues were covered, and I thought they were covered usefully. We considered topics such as the major strategic concerns facing research libraries in the next five to ten years, the characteristics of the effective research libraries, consideration of what are the bellwether institutions and why those are the bellwether institutions, as well as looking at some of the specific change projects and activities that the participants were involved in and how the information on those projects could be useful and informative to other people facing some of the same concerns. Because of the response to this first institute, the ARL Management Committee has encouraged us to schedule another similar institute. We are going to schedule it tentatively for this fall or for February of next year. I will be sending you a brief inquiry to determine the extent of interest that you might have in participating in another one of these and also to establish which date will be most suitable. In addition, the committee has encouraged us to think about holding another or designing another institute perhaps dealing with some of the topics covered in this first institute, but allowing those topics to be covered more thoroughly and extensively.

Finally, I want to reiterate Shirley's request for help in recruiting staff. As you might suspect, we have been rather pressed, since Maureen went to Yale, to maintain the current level of training activities, along with trying to invest in some of these new developmental projects in the office. Because of that, we are very eager to fill that training position as quickly as possible. We are looking for someone who has worked in a research library, someone who might have very limited experience, maybe three to five years, but is willing to learn about the training of this business, as well as someone who has a flare for working with people and is willing to be a nomad for awhile. There is a lot of traveling involved.

Report on the CLR PETREL Program

MR. SMITH: The next item on the agenda is a report on the CLR PETREL program from John McDonald.

MR. McDONALD (University of Connecticut): You are probably experiencing information overload by now. I hate to add to your troubles. Maybe a little comic relief is in order. Lee Jones alluded to the legal eagles getting into his business. It reminded me of something I heard recently about the fact that medical researchers are going to use lawyers for experimental purposes rather than white mice. There are two reasons for this. Lawyers are now more numerous than white mice, and the researchers do not get as attached to them.

The officers and staff of the ARL did not want you to leave this meeting without hearing another of my fascinating reports on the CLR Program of Professional Education and Training for Research Librarians (PETREL). At past meetings of the Association, I have reported on the status of PETREL projects and have solicited your interest and support for them. Since all of the PETREL initiatives affect either research libraries or the people who work in them or the library schools who prepare librarians to work in research libraries, this does seem an appropriate occasion to share information with this particular audience. Many of

you have supported PETREL activities in one way or another, and so one of you have been direct participants in PETREL sponsored projects. The level of ARL involvement has been substantial; but frankly, it could be higher. As I report on current and new initiatives of the Council on Library Resources through the PETREL program, I would ask each of you to consider ways in which your library might participate in PETREL activities; or if you are already involved, how you might participate more fully.

Among the older elements of the PETREL programs are the Management Intern Progam, the University of Michigan library school's CLR fellows program, UCLA's senior fellows program, and the frontiers and other conferences sponsored by the Council, some of which come under PETREL. Newer programs are the faculty/librarian cooperative research projects, the professional education planning grants, and professional education implementation grants programs. Something Duane has just alluded to is related to PETREL: the ARL-CMS Institute for Library Faculty. I will deal with each of these programs in turn and do so as briefly as possible, although I believe you will appreciate that the PETREL program has developed many aspects, and it is not now something that can be described in just a couple of minutes.

The Academic Library Management Intern Program actually predates PETREL, but we consider it part of our activity. I can do no better than to quote from the Council's annual report in reporting on the Management Intern Program. As you know, the objective of the Management Intern Program is to add to the number of experienced and capable individuals available for senior administrative posts. A comprehensive review of the nine-year-old program during fiscal 1982 verified its worth, and the Council consequently reinstated the internships for 1983.

The length of the program has been reduced from ten to nine months to coincide with the academic year. Five interns were chosen from a group of 90 applicants, bringing to 40 the total number of participants. I believe most of the current interns are here: Jill Fatzer from the University of Delaware Library, who is working with Penny Abell at the University of California, San Diego; Susan Rhee from UC San Diego, who is working with Pat Battin at Columbia; Gordon Riley from Northern Illinois University who is working with Charles Churchwell at Washington University, St. Louis; Helen Spalding from the University of Missouri, Kansas City, who is working with John McGowan at Northwestern University; and Sarah Thomas from RLG who is working with David Bishop at the University of Georgia. Six new interns have just been selected and will begin their internships in the fall. CLR has prepared a news release on this, which will reach you very soon.

The University of Michigan library school is currently screening applicants for its program. The coming year will be the third program, and this time around it will enjoy support from the H. W. Wilson Foundation, as well as from the Council on Library Resources. The first four CLR fellows completed the program at Michigan in the spring of 1983. The second class of fellows are nearing completion of their work; and as I said, the third class, when selected, will begin work in the fall.

At UCLA, the Graduate School of Library and Information Science hosted its second group of senior fellows this past summer. Of the 15 participants, more than half were ARL directors, proving, I guess, that you can teach old dogs new tricks. Direct testimony I have received from various participants suggest that the senior fellows program is well worth the intensive effort that Robert Hayes and his staff require of the fellows. The senior fellows program will continue, but not until the

summer of 1985. This coming summer Los Angeles will be saturated, at a complete standstill because of the Olympics.

Two so-called frontiers conferences have been held thus far, the first at UCLA and the second at Wissler, British Columbia, last June. The latter conference, hosted by Basil Stuart-Stubbs, produced an interesting mix of students and education organization, from both sides of the border. It is not clear whether other frontier conferences will be supported. I have not talked to Jim about this, but I have no doubt that it is a good idea, for another conference would elicit an interested response.

The faculty/librarian cooperative research library program is in its fourth round of more than 40 proposals received. Twenty-one have been funded for varying amounts up to the maximum grant of $3,000. Deanna Marcum tells me that 22 new proposals were received in the April cycle just this month and that the general level of them is good. After an initial screening by Council staff, these proposals will go to the PETREL Advisory Committee for final review. The next deadline for submission is October 1. You can help by giving the program local publicity and encourage willing staff members to submit proposals.

Perhaps the most exciting new PETREL initiative is the two-part program of professional education planning and implementation grants. These grants are intended to assist in enriching library education programs. If you have had a chance to look at the recent issue of Current Developments, on page 5 you will find a fuller description of the program than I intend to give you here. I will only say that a bit of that said the objective is to assist librarians and library educators who are seeking ways to enhance both basic and supplementary education for the profession. The Council has invited graduate library schools and other divisions of research universities to consider how they might usefully contribute to the program. A grant program will be in two parts: 1) up to 15 planning grants of $5,000 each will be made to cover all or a portion of the cost for planning educational activities, and 2) under the second part the program, up to five implementation grants in the $25,000 to $75,000 range will be made.

There are few constraints on the form or scope of the proposals, except that programs must be offered in an academic context. Please remember that research libraries, as well as library schools, are eligible to submit under both parts of the program. Of a dozen or so planning proposals submitted in the first round, none of them from research libraries, six or seven will be funded. These were received in March and reviewed by the Council and the committee. The next review for planning proposals will be late July or early August. Implementation proposals will be reviewed on October 1, 1984; April 1, 1985; and October 1, 1985.

The ARL-OMS Institute for Library Faculty—I will not dwell on that. It has had some advice from the PETREL Advisory Committee as well as the chair of ARL's own Committee on Library Education. Duane did not reveal the names of the faculty members who will participate, but I assume that news will be forwarded to you soon.

In closing, I want to say just a few words about the possibility of a strong, new initiative by CLR directed by what might be termed on-the-job training for beginning professionals. Contingent on funding from outside sources, CLR plans to make support available to research libraries for innovative programs of training for newly-hired librarians. Proposals might involve internship-like opportunities,

aspects of the teaching library concept, or other practical training activities that would build on the theoretical base that new professionals gain in library schools. As much as 20 percent of the time of these people might be paid for by the Council's support if it materializes, and I would urge you to stay tuned for more news about this likely new initiative.

This concludes my report, and I think you will agree that the Council's PETREL program is thriving. It offers opportunities for new individuals, for libraries, and for library schools to bring about change and improvement in education and training for research libraries.

Report of the ARL President

MR. SMITH: The final item on the agenda is the President's report. I am going to give a very brief report on Board actions, essentially because I believe that the context for the floor actions that we took at this meeting have been rather clearly established in a variety of reports at this session and in discussion at Business Session I. So I will simply report on what we did.

First, for the term of the current plan, that is until 1988, the dues increase should be held to a range of four to seven percent annually.

Second, the ARL Microform Project Cataloging Clearinghouse should be funded by ARL for three years, either out of dues or grants, rather than fees, while a more appropriate home is sought for the project. The ARL Committee on Bibliographic Control has been assigned oversight responsibilities for the clearinghouse.

Third, a new set of committee charges was adopted for all ARL committees. The primary reasons for this, of course, was to relate the charges to the responsibilities that the committees were undertaking in relation to the plan.

Finally, it was decided that the executive director's activities and status report each year should include a full review of the status of the tasks in each of the objectives that were carried out during that year, relating accomplishments to the annual objectives of the plan.

That concludes my report and also concludes this meeting. Thank you all.

APPENDIX A

ARL ACTIVITIES AND STATUS REPORT
October 1983-April 1984

ARL Plan Progress

During the past six months, the ARL Board and staff have continued to work on organizational structures for implementing the Association's Five Year Plan. At its January meeting, the Board approved a structure for the coordination of work related to Objective 2 (Access) and Objective 3 (Preservation). It appointed a new standing Committee on Collection Development, chaired by Robert Miller, and a Coordinating Committee on Collections and Access, chaired by Elaine Sloan. The Coordinating Committee is comprised of the Chairs of the Committees on Bibliographic Control, Collection Development, Preservation, and three other ARL Directors, and is charged to coordinate the Association's efforts in these areas of interest.

The Board also considered recommendations for coordinating the Association's efforts in management, personnel, and management information. A format for implementation of the Plan in these areas will be reviewed by the Board in April.

At the direction of the Board, staff prepared a revision of the charges to ARL committees and task forces, and a brief description of the organizational relationships between and among committees, task forces, Board, staff, and membership. This document will also be reviewed by the Board in Colorado Springs.

Projects and Programs

The CONSER A&I Coverage Project

The CONSER A&I Project became operative on November 1, when Julia Blixrud from the University of Minnesota joined the ARL staff as Project Coordinator. The goal of the project is to add abstracting and indexing information on 105,000 serials to the CONSER data base, in order to provide a needed link between A&I service citations and library catalogs. To date, forty-five major A&I services have agreed to participate, and to continue to report changes in their lists to the Library of Congress or the National Library of Canada after the project itself is completed. These forty-five services cover 60,000 serial titles. In addition Chemical Abstracts Service has already contributed nearly 13,000 titles, contracting separately with OCLC for searching and processing as an in-kind contribution to the project.

Procedures for searching and processing information have been developed and tested, and about 5,000 titles have already been searched by project staff or OCLC

staff, in addition to the CAS titles. The Project Coordinator reports that very few titles are found to already have A&I information in the 510 field; this discovery confirms the usefulness of a special project of this type.

A contract for searching and processing titles has been negotiated with OCLC. It should be noted that all titles handled by the ARL project become part of the CONSER data base and are distributed on the CONSER tapes. This insures wide availability of the machine-readable records for indexed or abstracted serial titles, an important core literature.

A detailed progress report on the CONSER A&I Project was prepared for the funding agencies. This report is available on request from the ARL Office.

ARL Microform Project

Preservation Component. A detailed survey of research libraries and historical societies to determine their current level of investment in preservation and their methods, standards, and output for preservation filming has been developed by Project Coordinator Jeffrey Heynen, and has been tested at Stanford and Princeton Universities, the Ohio and Wisconsin state historical societies, and the South Carolina Department of Archives and History. The revised survey instrument will be mailed to approximately 150 institutions at the end of April.

As responses are returned, Mr. Heynen will analyze the results and interview by telephone approximately 35 institutions that have reported a level of activity that would make them logical candidates for a nationwide cooperative effort in preservation microfilming. A preliminary analysis is expected by the time of the ALA Dallas Conference, and a final report with recommendations for action by ARL and other organizations should be ready by August.

The survey has been funded by NEH, and is being co-sponsored by the ARL Preservation Committee, the ALA/RTSD Preservation of Library Materials and Reproduction of Library Materials Sections, the RLG Preservation Committee, and the RLAC Task Force on Preservation. The Project Coordinator will follow up directly on the microfilming aspects and will work in conjunction with other sponsoring organizations on other preservation aspects uncovered in the survey and interviews.

The survey is a necessary complement to other efforts underway in the area of preservation, such as those at CLR and RLG. A more comprehensive report on these efforts will be presented at the ARL Business Meeting on Friday, April 27.

Bibliographic Component. Mr. Heynen is continuing to operate the Microform Cataloging Clearinghouse with funds provided by the Mellon Foundation. The Clearinghouse continues to receive a steady flow of both inquiries and expressions of gratitude for information and help provided by the Coordinator. Data from the Clearinghouse has been used to develop a number of new cataloging projects, such as the RLAC Task Force's project to catalog American Fiction, the New York State Library project on American Periodicals, and the University of Georgia's American Poetry project.

The RTSD Board, RLAC, and others have expressed the desire that the Clearinghouse be continued, and the ARL Board will consider a recommendation for doing so at its April meeting.

Mr. Heynen continues to work closely with LC on an essential component of bibliographic control for microforms — the National Register of Microform Masters (NRMM). His work to date has expedited progress on the prospective automated file and has initiated action at LC on producing a retrospective cumulation.

In addition, Mr. Heynen has been in contact with OCLC with regard to the addition of master negative information to the OCLC data base, and with RLG on making their master negative fiche as useful and widely available as possible.

Guide to Preservation Microfilming

One of the tasks listed for 1984 under Objective 3 of the ARL Plan is to "develop a guide to preservation microfilming." This task is now underway as a joint effort by ARL and the Northeast Document Conservation Center (NEDCC). The Mellon Foundation and the National Historical Publications and Records Center (NHPRC) have provided $52,000 for the publication. Andrew W. Raymond, Associate Director of NEDCC for Microfilming Services, will be the principal author; the ARL Preservation Committee will review and advise on the project, and ARL will publish or contract for publication of the final product. Mr. Raymond hopes to complete the manuscript before June of 1985.

The guide will emphasize practical guidance on: 1) the administrative aspects of preservation filming, including staff, budget considerations, policy-making, and maintenance of statistical and cost data; 2) coverage of all types of library and archival materials, e.g., serials, monographs, manuscripts, photographs, oversize materials; 3) all aspects of procedures including selection, preparation for filming, in-house vs service bureau production, quality control, storage, and bibliographic control; and 4) evaluation of prospective technologies such as video and optical disk for the preservation of and access to library and archival collections. The manual will include an annotated bibliography, resumes of major preservation microfilming projects and a list of resources which can be consulted in planning future projects.

Jeffrey Heynen and Pamela Darling will serve as consultants to the project.

Institute for Library Educators

One of the tasks listed for 1984 under Objective 5 of the ARL Plan is to "initiate an institute on research library developments for library educators." Funding for this effort has been made available by the Council on Library Resources; and Duane Webster, Director of the Office of Management Studies, is currently completing plans for the Institute, which will be hosted by the Graduate Library School and the University Libraries of the University of North Carolina at Chapel Hill. The Duke University Library and the D.H. Hill Library of North Carolina State University are also cooperating on the Institute, scheduled for July 1984. An advisory committee, comprised of members of the ARL Library Education

Committee and several other appointees is providing guidance for the Institute. Mr. Webster will report in more detail at the ARL Business Meeting.

National Collections Inventory Project (NCIP)

This project, listed as task # 1 for 1984 under Objective 2 of the ARL Plan, is now well into its second phase. Jeffrey Gardner is the Project Coordinator, assisted by Jutta Reed-Scott, who is on temporary assignment at OMS. Phase I of NCIP, funded by CLR, was completed at the end of December with the preparation of a manual intended to provide assistance to bibliographers as they assess library collections and complete worksheets for entry into the North American inventory. Phase I also included the design of a training program for selectors and bibliographers and the development of a clearinghouse of standardized tests for validating collection assessments. Late in 1983, a grant of $95,000 was received from the Lilly Endowment to test these materials and programs in Indiana during 1984.

This test is Phase II of the project, now underway at Indiana University, Purdue University and the University of Notre Dame. Staffs at these libraries are using the manual and training materials to assist them in working through the Conspectus. At the same time, methods for identifying important specialized collections in non-ARL libraries are being tested, and a discussion of possible uses of the inventory to facilitate statewide collection development cooperation has begun. Finally, ARL and RLG have successfully negotiated a contract ensuring that the on-line inventory of research collections will be maintained and made readily available. Phase II is scheduled for completion at the end of 1984.

The third Phase, which will begin in January 1985, will facilitate the implementation of NCIP throughout North America. Planning procedures, manuals, and supporting documentation will be made available to the library community by ARL's Office of Management Studies, which will also provide, through its consultant program, skilled staff to assist libraries in undertaking the assessment of their collections.

Committee Activities

In addition to the activities of the committees on preservation and library education described above, other ARL committees and task forces have been active during the past six months. The OMS Advisory Committee met in January to review OMS programs and projects and to consider a broadening of its charge to encompass management-related activities not directly related to OMS. This broadened charge had been recommended by the Task Force on Objective 6 and was adopted in principle by the Board subsequent to the Advisory Committee's meeting.

Some of the activities of the Preservation Committee have been discussed earlier in this report; and others, such as the development of a model preservation project and the preparation of minimum preservation guidelines for ARL libraries

will be reported on more fully by Committee Chairman Margaret Otto at the Business Meeting.

The Library Education Committee, as reported earlier, has concentrated on advising and guiding the Institute for Library Educators. The career recruitment brochure produced by the Committee in 1983 continues to be in steady demand by career guidance counselors and other individuals and organizations in the field.

The Bibliographic Control Committee has pursued a very active agenda since its program presentation in October 1983. The Committee met during ARL Midwinter and again on March 9. The Chairman, Joseph Rosenthal, met with the RTSD Heads of Technical Services in Large Research Libraries Group (commonly known as the Big Heads) during ALA Midwinter to brief them on the Committee's concerns and activities. The briefing was followed by a lively discussion of common areas of interest and an invitation to return annually for further exchanges of ideas.

The Statistics Committee, in addition to its ongoing responsibilities for oversight of the statistical programs of the Association, explored several new areas of interest at its meeting in March 21-22, including the possibility of developing an ARL price index and the possible addition of output measures to the ARL Statistics. Dr. Martin Cummings, director of the CLR Economics Seminar project, attended the Committee meeting, briefed the members on his projects, and enlisted the cooperation of the Committee. These projects will be discussed by Richard Talbot and Jim Haas at the Business Meeting; Dr. Cummings has offered specific support for ARL to carry out one of these projects, and the Committee Chairman and ARL staff will develop a proposal within the next two months for presentation to the Council.

The Statistics Committee has also been pursuing the possibility of examining and comparing the ARL-library results of the CFAL study done by Paul Kantor for the National Science Foundation. Directors of participant libraries will discuss this study further at a meeting on Friday afternoon, April 27.

Staff and Office Activities

The availability of two vacant positions in the ARL Office and one in the OMS Office has provided the opportunity to consider reorganizing the Association's staff in order to make the best possible use of skills and experience on hand, to integrate OMS and ARL staff activities more effectively, and to bring in new staff members with skills and experience complementary to those of current staff.

In order to fulfill those functions assigned to the ARL Office (administration, communications, support for Board and committees, program and project management, and planning and development), a more flexible organization structure will be tried out during the current year. Duane Webster will act as operational deputy to the Executive Director in addition to his current responsibilities as Director of OMS and will be staff liaison to the Committee on Management, Jeffrey Gardner will staff the Collection Development Committee as well as being project director for the National Collections Inventory Project, and Nicola Daval will staff

the Statistics and Bibliographic Control Committees. Carol Mandel continues to work on a consultant basis as project director for the Microform and CONSER A&I projects. A staff development and training officer is being sought to work on OMS training activities and to staff the Library Education Committee and the Staffing Task Force, and a program officer with experience in preservation and/or quantitative techniques is being sought to fill the staff complement. In the meantime, the Executive Director is staffing the Preservation Committee. The Association's salary budget has been reallocated to accommodate this reorganization of responsibilities, and all professional staff members are now keeping programmatic time records. It is hoped that the vacant positions will be filled by mid-summer.

ARL's new Controller, Benjamin Stubbs, has made great progress in updating the Association's fiscal systems. The payroll has been automated, all of the Association's funds have been consolidated into a single set of investment accounts, and a service bureau has been engaged to automate the accounting system. The new system will provide monthly reports for each program, project, and grant, and will make monthly and year-to-date comparisons to budget routinely available.

The automated accounting system is one of the services provided by a Washington-based cooperative agency for non-profit organizations of which ARL has become a member. This membership should enable us to hold down the costs of health insurance, office supplies, and printing services. Savings in these areas are expected to offset the service costs of automating the accounting system and the payroll.

Legislation and Federal Matters

Telecommunications. The membership has received several reports on telecommunication developments since the coalition formed last autumn began its work. The coalition's consultant, Walter Bolter, will be a speaker at the ARL Program on Thursday. The FCC decision on monthly access charges for dedicated private line switches was reported in the March ARL Newsletter.

Other categories of charges that would have a negative impact on library data transmission are under reconsideration by the FCC. The Commission is expected to arrive at a decision in June on some of these proposed charges, others may be postponed even further.

Senator Pressler of South Dakota is leading an effort to get the FCC to consider a special category of service charges for library private lines, which would make services available to libraries and networks at rates in effect on September 30, 1983, with a provision for modest annual adjustments. Details of this effort were sent to all ARL directors on April 11 in an "Urgent Memorandum" from the ALA Washington Office.

National Archives. A bill to re-establish the National Archives and Records Service (NARS) as an independent agency is now making its way through both houses of Congress. The Senate Committee issued a favorable report on its bill (S. 905) on

April 3, and the House bill (H.R. 3987) also has substantial support in committee.

HEA Reauthorization. A detailed report on the reauthorization of the Higher Education Act appeared in April 3 issue of the ALA Washington Newsletter. Title II-C remains unchanged in essence in both bills that have been introduced, H.R. 5210 and H.R. 5240, except that the authorization levels are considerably higher in H.R. 5240. Since the Senate is reluctant to address reauthorization of this legislation until after the 1984 election, it appears unlikely that anything definitive will occur this year.

HEA 1985 Appropriations. Hearings on FY 1985 appropriations for HEA library programs have not yet been scheduled, although it is possible that they will begin in mid-May. In the meantime, letters and personal contacts with members of the appropriations committees and with other Senators and Congressmen continue to be very effective in reminding the legislators of the value of library programs; evidence of this effect is a recent letter from Richard Dougherty which was made part of the March 6 Congressional Record by Representative William Ford.

NEH. Appropriations hearings for the National Endowment for the Humanities were held during the week of April 9. Representative Yates, who chaired the hearings, has been a consistently strong supporter of NEH programs, and it seems likely that the committee's recommendations for appropriations will substantially exceed the agency's request. The need for a concerted effort to preserve library and archival materials was raised by several witnesses. Preservation is also a high priority for the National Humanities Alliance (NHA), of which ARL is an active member. The Endowment's reauthorizing legislation will be considered next year, and proposals for coordinated programs and strategies for addressing preservation needs are certain to be welcomed both by the Congress and by the agency. ARL is in a good position to help NEH construct a strategy for funding a nationwide effort in this area; the Preservation Committee's discussions during the April meeting will be crucial in this regard, as will the CLR initiatives.

LC Appropriations. The Library of Congress has requested appropriations of $239.3 million for FY 1985, plus $11.5 million to build a mass deacidification plant and $111 million for renovation of the Jefferson and Adams buildings. Sue Martin testified for ARL on behalf of the Library before the House Legislative Appropriations Committee; and she and Carolyn Harris, Preservation Officer at Columbia University Library, also testified at a special hearing on the deacidification plant before the Senate Rules Committee.

National Library of Medicine. The Medical Library Assistance Act (MLAA) reauthorization bill passed the House during the 1983 Congressional session. However, the Senate has still not acted largely because MLAA is part of an omnibus health bill that also contains amendments relating to funding for fetal research and other very controversial matters. NLM has requested $51.3 million for FY 1985 operations, an increase of 3.4% over its 1984 appropriation. Hearings for agency officials have already been held in both the House and the Senate, public hearings will be held early in May. Included in the NLM request is $1.3 million for developmental projects related to academic information management (as recommended by the 1982 report authored by Nina Matheson), and $2.2 million for projects in medical informatics.

National Agricultural Library. NAL has requested $11.2 million for FY 1985, an increase of 14.3% over its FY 1984 request. The House and Senate Committees have both held hearings on the Department's budget; indications are that the Library's request was received favorably in both committees.

External Relations

Representing the interests of research libraries to other organizations in the world of higher education and libraries continues to consume a significant amount of time, particularly for the Executive Director. Organizations with whom we have had significant, issue-related contacts during the past six months include but are not limited to the Ad Hoc Educators Committee on Copyright, the CNLIA Copyright Committee, the Association of American Universities, the American Council of Learned Societies, the International Federation of Library Associations and Institutions, the National Association of State Universities and Land Grant Colleges, the Federal Communications Commission, several House and Senate committees, the American, Special, Medical, and Law library associations, the Northeast Document Conservation Center, the American Council on Education, the National Humanities Alliance, the Division of Library Programs of the Department of Education, OCLC, RLG, CLR, and the ALA Washington Office.

Since my last report to the membership, ARL has received financial support for projects from the Council on Library Resources, the Xerox Foundation, the General Electric Foundation, NEH, the Andrew W. Mellon Foundation, and the Eli Lilly Endowment. For their sustained recognition of the Association's key role in support of scholarship and research, these agencies deserve our gratitude. For their friendship, support, good advice and continuing interest in our cause, I would like to take this opportunity to render personal thanks to the program officers and executives of all of these foundations. Working together, ARL and our partner organizations have laid the groundwork for important cooperative programs in bibliographic organization, collection development, and preservation in the research libraries of North America. The greater part of the task lies before us, but the willingness to continue to share responsibilities is a sign of great hope for the members of ARL, their parent institutions, and the scholars, researchers, and students their collections and services support.

APPENDIX B

Preserving Our Intellectual Heritage:
General Directions and Next Steps

April 1984

Council on Library Resources

Preserving Our Intellectual Heritage

Introduction

That preservation of published materials, archival collections, and manuscripts is an obligation of libraries and archives is well understood but not easily accomplished. Because of the sheer magnitude of the assignment and the organizational, intellectual, technical, and financial difficulties inherent in it, the development of effective programs has been slow. However, recognition of the extent and importance of the problem has grown in recent years, and understanding now seems a match for the difficulties. This fact stimulates optimism in a number of quarters that there is now some prospect for significant progress. It is this sense that the time is right for concerted action on an old problem by many organizations and individuals that prompts preparation of this statement.

Participants in Forum II (Wye, October 1983) suggested that CLR begin the process of finding an appropriate way to shape a preservation strategy, drawing especially on the conclusions reached at Wye and on the work of a Preservation Task Force that reported at Forum I (Wingspread, December 1982). In response to this request, an outline of this paper was prepared and distributed for comment and in January and March 1984, CLR staff met with three advisors (Harold Billings, Margaret Child, and David Stam) to consider some of the substantive issues.

This paper reflects the Forum recommendations and those discussions. It is not a draft of "the comprehensive national plan" that has, at times, been called for. In fact, discussions thus far raise reservations about the

appropriateness of a "national plan" in the full sense of that term. Rather than trying to provide a detailed description of a theoretical approach to preservation, it seems more important to find ways to begin the real work of preserving library materials in the context of a reasonable but generally described national strategy.

The key to progress in preservation seems to be to provide incentives for individual institutions to pursue local goals in relation to national goals. If this is a valid conclusion, the immediate tasks are to clarify the requirements of researchers and scholars that will affect preservation priorities and methods, to understand and express the public interests that must be attended to, and to stimulate more preservation activity in a growing number of libraries and institutions.

General Directions

In simplest terms, the preservation problem has two aspects that need simultaneous attention--the retrospective and the prospective. Existing collections are deteriorating, and a great many volumes are, for all practical purposes, already beyond use. There are also the publications of the future. Will they simply add to the retrospective problem, or can past practices be changed to bring a turning point through improved paper quality, new manufacturing methods, and computerized and other forms of stored text?

The prospective problem is being attended to in several ways. National libraries (notably the Library of Congress and the National Library of Medicine) are exploring new text conversion and storage technologies. High-volume, low-cost deacidification techniques are now being developed for

application to new materials; these techniques will slow the rate of deterioration significantly, increasing the useful lifetime of the paper to the 400- to 600-year range. (Although this technique cannot add strength to materials already embrittled, it can benefit the many new and older books whose paper is acidic but still flexible, therefore contributing to the reduction of the retrospective problem as well.) Moreover, significant prospective preservation will reduce the rate of growth of the retrospective problem. Work is also under way on several fronts to set appropriate standards for paper to assure improved longevity and durability for books and to press for their adoption in paper making and book manufacturing.

The retrospective problem has had attention over a long period of time and there have been many constructive results, but the sheer magnitude of the number of items involved and the obvious visibility of crumbling books and papers on the shelves of research libraries and the nation's historical societies and archives prompt concern for the future of these collections that is not dispelled by signs of modest progress.

It is now time to build on the strong foundation that has been put in place during the last decade or so. Many of the facts about paper quality and ways to treat books are well established. Some libraries and library organizations have begun institutional or cooperative preservation programs. Methods of assessing collection condition and of administering preservation programs have been developed. Some new training programs for conservation technicians and program administrators have been created, although they are not yet turning out skilled individuals in adequate numbers. The basic computerized bibliographic system that is essential to a massive, coordinated

preservation program is essentially in place, and the cause of preservation is now receiving attention internationally. Perhaps most important, there is growing understanding that future success is linked closely to effective action by many institutions working cooperatively to address their own individual problems in a national context.

The focus of this paper is on saving, selectively, the record of the past: in effect preserving the principal asset of civilization and, in the process, assuring and extending access to all who would put that record to use.

There are three distinct aspects to retrospective preservation:

- o creating and maintaining a benign environment (both physical and human) that will reduce the rate of further deterioration;
- o preserving in appropriate ways certain rare materials of substantial intrinsic value, and stabilizing less valuable materials that cannot be used effectively in any but their original format; and
- o capturing in permanent form the content (as distinct from preserving the physical item) of materials containing information that must be retained in the collection but whose original format is already brittle (or so chemically unstable that it will become so) and that can be effectively used in the secondary format.

In terms of distribution of effort, it is clear that content preservation will be the dominant activity because present and potential technologies make it less costly than physical treatment to preserve original materials, and because many items are already beyond physical salvage.

In order to develop high capacity in each of these activities, several underlying requirements must be met.

- o A method of establishing guiding principles, of formulating and modifying policy, of adjusting priorities, and of meeting specified objectives is essential.
- o The cost of expanded preservation activity in libraries and archives needs to be acknowledged and funded.
- o Additional production facilities for conservation treatment and content preservation in secondary formats need to be established in appropriate locations to serve a number of institutions. Crucial to success in this effort will be expanded efforts to recruit and train library conservators, so that appropriate treatment services meeting the highest quality standards are available. Both training and procedural refinement will also be necessary to create large-scale format-conversion programs that meet current bibliographic and technical standards.
- o Expanded and sophisticated research capabilities are required to develop more effective uses of present and anticipated technologies, to formulate efficient operating modes, and to undertake economic planning for preservation activities.
- o A much-expanded educational and informational program needs to be outlined, developed, and used to promote understanding and, subsequently, support for a major commitment of public funds to meet society's obligation to protect its own intellectual heritage.

These five elements of a national strategy deserve concentrated attention. This paper does not provide details but it does suggest ways to begin.

First Steps

Establishing organizing responsibility

To enhance prospects for effective action and adequate funding, it is imperative that there be a sense of national direction for preservation activity that is credible to the world of scholarship and research and that is financially acceptable to research libraries and universities in the light of competing objectives. A set of principles to guide action must be formed and articulated to provide a backdrop against which work of many institutions and organizations might be shaped.

The process of setting the direction is itself a matter of great importance. It is necessary to involve individuals from professional library organizations, the key scholarly associations in the American Council of Learned Societies, the Association of American Universities, and knowledgeable specialists. Many matters must be considered: organization and management, distribution of effort, funding, selection priorities, and public information --all in the context of carefully drawn objectives. Given a sense of direction and responsible leadership, the libraries of research universities and other research facilities will be able to expand their preservation work because they will be in a position to anticipate and prepare for the significant cost and effort required over an extended period of time. The

federal government and private foundations also are to join in the effort if goals are sensible and can be implemented.

Among the principles that are likely to be part of a workable national strategy are selectivity rather than comprehensiveness and content over artifact. Additional principles that probably will be incorporated in a national strategy include adherence to sound archival standards, adaptability of the product of one technology to successive technologies, and, above all, acknowledgement of national and international interdependency in preservation activity.

The scope and impact of the policies and practices that must be derived from such principles make it obvious that development of a national preservation strategy requires involvement of library directors and administrators, preservation specialists, and the scholarly community. What also is required is a fuller understanding of realistic goals, both at the national level and on the part of individual research libraries. The idea of the "nation's collection" must be established, along with a better sense that acquisition and preservation are opposite sides of the same coin. Building distinctive collections implies responsibility for preservation, and preservation helps assure maintenance of established national research strength. Individual research libraries, even the most prestigious among them, must become, in a functional sense, "branches" of the national collection. Individually, as they budget to buy, they must budget to preserve.

If the next decade is to see a frontal attack on the preservation problem (rather than on planning alone), concentrated attention on the matter

by active participants in preservation work is essential. Discussions to date have not sought to specify any permanent structure, but a "first state" body needs to be formed to carry the discussions to the next level of development and, when possible, to promote action. CLR has agreed to fund and host, for a limited time, a preservation committee that will include individuals who, by virtue of experience and knowledge, can express the concerns and interests of the entities that must contribute if long-term objectives are to be achieved. This committee will be formed during the spring of 1984 and will shape its agenda in the context of current discussions.

An early item on the agenda will be fuller articulation of the principles that should guide initial work and formulation of the necessary policies that will enable many libraries to expand efforts with assurance that the product of their work will be part of a cohesive whole. Additional topics for immediate attention include improved coordination of current preservation work, promotion of needed bibliographic refinements, and expanded participation by increasing numbers of institutions. This "pro tempore" committee also will need to propose the permanent structure for a long-term preservation effort.

While these and other agenda items are of great importance, four key topics need attention by the committee and others as well if the preservation tide is finally to be turned.

1. Funding

While the magnitude of the projected work (whether measured in terms of items or dollars) is not known, it is certain that the need is great and

that at least a decade of purposeful and substantial effort will be required if the problem is to become manageable. Funding needs must be considered with that time frame in mind. The single most important task is to establish a realistic funding plan and to assist libraries as they build the case for support.

Some initial steps, anticipating a substantially expanded preservation effort, are being taken by CLR. Explorations are under way to determine foundation interest in providing limited funding for specific activities that need prompt attention. Discussion of preservation needs and long-term financial requirements is on the agenda of the spring meetings of the Association of American Universities and the Association of Research Libraries, and of the summer meeting of the American Library Association. All of these sessions must address the realities of costs and the necessity for funding commitments, since plans cannot be turned into action without substantial increases in expenditures.

Institutional funds and foundation assistance alone are unlikely to be adequate. State and federal funding will be needed over an extended period of time. Evidence of private participation and agreement on a plan of action are likely to be essential elements in making the case for government support.

2. Production facilities

Regional facilities offering both physical conservation treatment and high-volume format conversion services to a number of libraries are needed. Creation of separate operating organizations to serve groups of libraries seems the best way fully to employ scarce talent; to train additional

technical staff; to use effectively expensive equipment; to establish and enforce appropriate qualitative standards; to promote coordination regionally and nationally; and to test and bring online successive generations of technology, including scanning and communications systems, mass storage devices, and facilities for the chemical treatment of books and other materials.

The New England Document Conservation Center, established with CLR assistance and now in its eleventh year, is a very useful model. Its experience will be important to the development of additional regional centers, particularly as it suggests guidelines for establishing a viable balance among programs for format conversion, individual treatment of rare materials, "mass" procedures for the physical care of materials of lesser intrinsic value, and field services (chiefly consultation and disaster assistance). While the libraries to be served, the scope of services offered, the technologies employed, and the management structure of each facility are all matters for resolution by local governing units, it appears that the primary need is for the provision of preservation services for major research libraries and the many specialized and distinguished research collections in each region of the country.

Given the prospect of adequate funds to provide initial equipment, staff, space, and necessary operating supplies to bring a regional center into being, representatives of the lead institutions in each region must take the initiative for planning and development. Taken together, these governing boards would help set the national course for building an adequate operating capacity for retrospective preservation.

3. Research

The work of preservation is a continuing enterprise and over time will necessarily be concerned with material in all formats and will employ many kinds of technologies. The research and analytical work required is extensive and costly. This work needs to be conducted in a purposeful way and under direction that is keyed to the needs of libraries with extensive preservation programs and to the operations of the projected regional centers.

For a mix of reasons, this technical research might best be accomplished in the nation's interest by a consortium of the National Libraries and the National Archives. Imaginative work by the Library of Congress, the National Library of Medicine, and the National Archives is already an important national asset, which can be strengthened by increasing communication and coordination among them. Closer ties among these organizations and development of an external research advisory group to assist with setting priorities, extending results to operating units, and promoting adequate funding for further technical work seems essential. The practice of contracting for research services, both within and beyond the government, can play an important role in expanding preservation research capabilities well beyond the limits of existing institutional laboratories, as has been demonstrated by the Library of Congress's deacidification and optical disk projects and the National Archives' evaluation of archival issues relating to microforms. NASA, the National Bureau of Standards, university research teams, and the capabilities of the private industrial and commercial sector can all play a role in developing the preservation technologies of the future.

4. Extending understanding

Over the years, increasing numbers of Americans have become aware of the importance of preserving the best of what has been built by each generation and of the necessity of protecting their natural world. A parallel interest in the full range of our intellectual heritage is growing and attracting wider attention, but as yet there is no cohesive public sense of a preservation ethic for the product of mankind's accumulated learning and experience. At root, the concern is not that all books from the past should be preserved, but rather that the important parts of the content of the human record and intellectual creativity be protected and made fully accessible for those who want or need to put the record to use. As a society, we don't really know how to do this well, and we will not learn until the substance of the question becomes widely understood and thoughtfully considered.

A purposeful, long-term effort is required to build public understanding, to establish what the interests and priorities of the public are, and, finally, to encourage public support at an appropriate level for preservation work itself.

Special attention must go to extending the influence of public information programs under way or projected by the Library of Congress. Useful publications and directions for effective exhibits can be prepared for use in public libraries; data and other information concerning the preservation problem can be compiled for use by national, state, and local governments; specialized studies exploring the links between resource availability and scholarly productivity can be encouraged; and university seminars might be established to build the understanding required as a base

for an evolving perception of the true importance of this topic. Related efforts need to be linked to the distinctive needs of specialized research libraries and archives.

If there is broad support from the scholarly and library communities for the establishment of the pro tem committee, and if the agenda proposed here can be refined, endorsed, and acted upon by the appropriate parties, a critical new phase in addressing the "preservation problem" will have been reached. It is time that libraries, universities, scholarly organizations, and all who value the record of our past join forces to carry forward the work.

APPENDIX C

COUNCIL ON LIBRARY RESOURCES
1785 Massachusetts Avenue, N.W. • Washington, D.C. 20036 • Tel: 202-483-7474

April 18,1984

BIBLIOGRAPHIC SERVICE DEVELOPMENT PROGRAM
Progress Report

Prepared for the Association of Research Libraries

This report is organized according to the major program areas reflected in the BSDP budget and emphasizes areas of special current interest. The narrative is not comprehensive, focusing only on the major events of the period.

An effort is made to identify for each project discussed what role it plays in achieving the objectives of the Bibliographic Service Development Program. It should be noted that all major reports generated by the BSDP are shared with the organizations which have helped fund the program. This does not include all final project reports, however. If you need additional information on any project, do not hesitate to contact the Council and we will be happy to provide copies of required documents.

STANDARDS AND GUIDES

1. The Association of American Publishers' project to develop codes for manuscripts in electronic form continues to make excellent progress. Both the qualitative and quantitative data gathering portions of the first phase have been completed and a draft of the first phase report is in hand. It should be accepted in the near future. Work has begun on phase two, the definition of the requirements for such a set of codes. The National Library of Medicine's task force completed work on identifying the elements in manuscripts that the library and information science world would like to have coded and have identified the purpose for each code. This project has had a very tight schedule from the beginning and there are now some signs that some slippage will occur.

2. The Council with the help and assistance of OCLC, organized and conducted an invitational meeting on Command Languages and Screen Displays for Online Services. Thirty representatives of organizations producing online catalogs, both academics and vendors, with some representing the system designer cause and others representing the cause of the end-user, attended the meeting. That portion of the discussion dealing with command languages was intended to help establish a context in which a Z39 committee could organize itself and go to work on the issues. There is considerable pressure to move on standards in this area from the International Standards Organization.

The other major topic of the meeting, screen displays, is not yet ready for standards. Indeed, there is much that needs to be done to

organize what other disciplines know about displays and determining whether any of that information would be useful for online catalog designs in libraries. The proceedings of the meeting will be produced by Paul Peters of Columbia and should be available within a few weeks.

3. A small grant was made to the International Federation of Libraries and Information Associations (IFLA) to support work to modify some software that is used by many third world countries to manipulate bibliographic records. This software, MINISIS, was not capable of supporting the UNIMARC formats. Once the work under this grant is completed, MINISIS will support them. Over 60 organizations world-wide use MINISIS.

ACCESS TO BIBLIOGRAPHIC DATA

1. A team of consultants (Jutta Reed-Scott, Charles Paine, and Dorothy Gregor) are just about to finish work on a report on retrospective conversion activities and prospects. The purpose of the report is to determine whether or not a national plan for retrospective conversion makes sense. If it makes sense, is it reasonable to take steps to define such a plan at this time. It is expected that there will be a meeting convened to discuss the report in detail and to recommend next steps.

2. The University of California, Division of Library Automation received a grant to assemble and build a packet radio terminal for use with online catalogs. Such a terminal will allow libraries to move terminals freely from one place to another so long as power is available. The terminal was demonstrated during the ACRL meeting in Seattle and in Colorado Springs during the ARL meeting.

3. The Council continues to be interested in the philosophical underpinnings of the bibliographic record structure of the country. That structure was created in the late nineteenth century, modified in the thirties, and is serving us still in a machine-dominated environment. Is there a need for fundamental changes in the structure as a result of the flexibility now available in the computer-driven bibliographic system now in place? Either the topic is too vague to stimulate the development of a proposal or few perceive a problem. The topic deserves to be explored.

4. The project to develop microcomputer software capable of capturing records from shared cataloging services, storing them, and reformatting them into ANSI compatible formats has been completed. The software is available in the marketplace.

LINK BIBLIOGRAPHIC DATABASES

1. A meeting was organized in January for representatives of organizations that wanted to learn more about the Linked Systems Project protocols and how they might implement them. More than thirty separate organizations were represented at the meeting and all received additional information on the protocols. It is likely that work on a generic

implementation of the protocols will begin as soon as the LSP systems tests are complete.

2. In February, a meeting was held of the technical staffs of the Linked Systems Project institutions and OCLC technical staff. Senior policy staff were also involved though the topics were strictly technical in nature. It is clear that OCLC is committed to building a machin link to the Library of Congress and over a longer time frame to implement the LSP protocols. In fact, they are interested in developing other applications in addition to those under development in the LSP project. How this will all happen is the subject of much work within OCLC at this time.

There have been suggestions that OCLC has not been invited to join a project for the exchange of book records. There is no such project within the context of the Linked Systems Project at this time. There is an effort, however, to explore what the requirements might be for the development of other uses (applications) for the link. OCLC has been invited to join in the activities of that project, called the Bibliographic Analysis subproject of LSP. OCLC has been invited to join in all phases of the Linked Systems Project and all participants are eager to see that this cooperation bears fruit.

3. From the Linked Systems Project, word has been received that the protocol has been successfully tested up through layer five between LC and RLG. WLN will soon complete testing of the fifth layer with the other participants.

NAME AUTHORITY STRUCTURE

1. The Council sponsored a meeting at the Library of Congress during the ALA Mid-winter meeting for selected Name Authority Cooperative project participants. The object of the meeting was to explain the Linked Systems Project and how that project might be expected to affect the operations of NACO in the future.

SUBJECT AUTHORITY STRUCTURE AND SUBJECT ACCESS

1. Forest Press and OCLC have begun work on a project to explore the use of the Dewey Decimal Classification system as a subject access enhancement for online catalogs. A high percentage of the English language MARC records produced at the Library of Congress have DDC numbers appended to them. In catalogs that still retain those numbers, though the collection may be organized by some other classification scheme, such an enhancement might be welcomed by catalog users. Results of this project will not be known for another year or so.

2. A grant has been awarded to OHIONET for the development of a system that will identify the LC Subject Headings assigned to books and the Dewey Decimal Class numbers assigned to those same books. The concept is to develop a map of headings that also refer to various class numbers and vice versa. Work should be finished and results reported within the next three months.

BIBLIOGRAPHIC PRODUCTS AND SERVICES

1. A consultant has completed work on editing the proceedings of the Baltimore meeting of online catalog system designers held last September. This document, discussing eight of the more pressing design issues of online catalogs, will be available from the Council within the next two months for a prepaid cost of $10.00. The participants represented many U.S. catalogs but there were also participants from Canada and West Germany.

2. Joe Matthews and Gary Lawrence have completed a detailed study of the data collected in the Online Public Access Catalog project. Few really startling additional facts or implications were uncovered. However, there is substantial evidence that system designers need to pay more attention to the subject access needs of the naive user as opposed to those of the experienced user. The strategies for dealing with disparate subject access needs in online catalogs are likely to test our best designers. Copies of the report are available from Joseph Matthews and Associates, Grass Valley, California.

3. New York University received a grant to study how successful or unsuccessful users are with online catalogs. Other studies have looked at how the user perceives the online catalog, not how useful the results of online searches turned out to be. It is likely that much will be learned about the needs of various classes of users for training and assistance in using online catalogs.

If this report has generated any questions, please do not hesitate to contact C. Lee Jones at the Council, 202-483-7474.

APPENDIX D

OFFICE OF MANAGEMENT STUDIES
SUMMARY OF 1983 ANNUAL REPORT*

Introduction

Dealing with change has been a central issue—perhaps the central issue—for academic and research libraries in recent years. During the 1970s, librarians found that inflation and stable budgets forced them to streamline operations and tighten management control. In the 1980s, the work of research library managers have been even more demanding because of changing student clientele, growing technological imperatives, and the redefinition of the role of information agencies in the academic environment.

One lesson gained from recent experience is that research libraries can adapt to economic pressures. Because the prevailing philosophy is that smaller means poorer quality, imposed cutbacks cause considerable anxiety. There have been efforts to attract attention to the plight of libraries by restricting services that have broad impact. In other cases, libraries have quietly absorbed the cuts, calling on staff to assume extra burdens on the assumption that monetary restrictions are short-term. In still others, administrators have imposed across-the-board cuts, eliminating expendable services and sacrificing personnel. Libraries have learned to live with the reductions, and the process has often led to a tighter operation.

For the forseeable future, managing with limited resources is the reality. If libraries approach this reality negatively, they will be at a disadvantage in influencing the university administration. A positive posture will enable library managers to take a larger role in academic decision making, and to redefine aggressively the capabilities of the research library. Elements of this new management posture include committing to organizational review and strategic planning; searching for alternative sources of support and funding; pursuing innovative new models of service and operation; restructuring roles and relationships to make the best use of human resources; redefining decision-making processes; seeking broader staff involvement; using more analytical and quantitative information to support decisions; and investing in ongoing development of staff resources.

University administrators can find significant funds to support new library efforts if the investment promises to help the institution deal with the future. Librarians have convinced universities to help support major organizations such as the OCLC Online Computer Library Center, the Research Libraries Group, and the Washington Library Network, as well as local automation efforts that carry significant costs. These successes should encourage others to pursue innovative uses for risk capital to allow libraries to evolve new roles and concepts of service.

* The complete Office of Management Studies Annual Report for 1983 is available from the OMS.

Of all the tasks facing the research library manager, however, visualizing the library of the future has proved most difficult. Futurists observe that generally we overestimate the extent and character of changes in the long term, while underestimating the extent and character of changes in the next five years. Itseems impossible to tell just what the rapid alterations in society, government, universities, technologies, and the library profession will mean for libraries during the next decade. While there are many grand schemes for the library 20 years into the future, the real problem facing most administrators today is how to succeed during the next five years.

Regardless of how the future evolves, the last few years have shown the importance of an active, positive stance on the part of senior library management. An aggressive, even combatant, style is needed to influence university information policy and university investment decisions during the next decade.

The role of the ARL Office of Management Studies is to help research library managers prepare for this vague and highly demanding future. During its first 13 years, the Office designed a series of self-study techniques aimed at analyzing and strengthening library programs in management, collections, preservation, and services. These techniques are fundamentally change strategies aimed at involving wide elements of the affected community in a problem-solving and planning effort to shape future capabilities.

The OMS also has added to the fund of information for library administrators. The Systems and Procedures Exchange Center (SPEC) now has published 100 SPEC Flyers and Kits covering matters of concern to frontline managers in academic and research libraries. These materials extend awareness of current practices in research libraries, stimulate problem solving, and test currency of library practices.

The staff training component of OMS is recognized in the profession as a major management development effort. Hundreds of library staff members have participated in Management Skills Institutes, special focus workshops, or in-house training activities. These training efforts are aimed at strengthening individual awareness of personal roles in contributing to improved library performance.

This annual report reviews the past year's activities in each of the major programs, and describes developmental projects that indicate future emphases of the Office. First is the design and testing of the public services self-study funded by the General Electric Foundation. The self-study reviews the public service function in research libraries and encourages the investigation of innovative service models. Second is the application of OMS experience with collection studies to the preparation of a national inventory of research library collections. Funded by the Council on Library Resources and the Lilly Endowment, this project employs the RLG conspectus as a tool to describe institutional collections systematically and comparatively. The availability of the resulting data should facilitate regional and national resource development planning. A third developmental effort is an Institute on Research Libraries for Library School Faculty, funded late in 1983 by the Council on Library Resources. The Institute is intended to strengthen the dialogue among library directors and those involved in the preparation of future library staff.

These developmental projects are based on a change in funding arrangements for the Office. The five-year funding for the Academic Library Program provided by the Mellon Foundation and the Council on Library Resources concluded in September 1983. For future funding, both agencies indicate a preference for shorter term projects with specific outcomes. Concurrently, the ARL Board has committed the Association to ongoing financial support for core operations.

The character of the OMS is evolving in accordance with its inventory of resources and services, changes in financial circumstances, and as the needs of research library managers require. In the long term, OMS programs must expand the behavioral emphasis of the past to include more analytical and quantitative components. This shift is predicated on the availability of support from ARL directors. After all, the future of the Office is dependent on the strength and success of those we assist.

Highlights of OMS Activities in 1983

Thirty-one libraries participated in self-study programs, with sixteen working on CAP projects, seven on public services projects, four in the organizational screening program, and four in the Academic Library Development Program.

Seven ARL libraries were selected to conducted assisted self-studies as part of the General Electric Foundation-supported Public Services in Research Libraries Project: Brown University; the University of California, Riverside; Columbia University; Michigan State University; the Newberry Library, the University of North Carolina; and Temple University.

Under the research component of the Public Services Project, seven libraries were awarded grants to carry out projects: the University of Arizona; Cornell University; Michigan State University; New York University; Pennsylvania State University; University of Illinois; Urbana; and Texas A & M University.

Working with six libraries in the Washington Consortium of Universities, the OMS completed a Meyer Foundation-funded project to carry out CAP studies and develop a procedure to help regional consortia strengthen resource sharing programs.

The Office collaborated with committees and executive staff of the Association on a $46,000 Council on Library Resources-funded project to develop tools and procedures for a national inventory of research collections. A $95,000 grant from the Lilly foundation funds a second phase of the project, which will include testing tools and procedures in three ARL member libraries in Indiana: University of Notre Dame, Purdue University, and Indiana University.

1983 was the final year of the Consultant Training Program. A fourth class of 22 members was chosen and trained during the year, and other consultant trainees continued to work with the Office on practicum assignments. With the 1983 class, the total number of consultants trained in the program is 77.

The Systems and Procedures Exchange Center issued 10 kits/flyers, maintained 400 subscriptions, filled 719 information requests, and conducted five surveys. The

Center also improved the physical quality and accessibility of SPEC kits.

Publications in 1983 included the Index to SPEC Kits, a revised Resource Notebook on Staff Development, and Occasional Paper no. #7: Budget Allocation Systems in Academic Libraries, by John Vasi.

In the Organizational Training and Staff Development Program, activities included nine Management Skills Institutes, two Advanced Management Skills Institutes held by special invitation in Australia, and nine special focus workshops.

The Council on Library Resources provided funding ($54,600) for a project that involves OMS staff in designing, conducting, and evaluating an institute for library school faculty. The three-week institute will be held in July 1984.

OMS Priorities for 1984

Each year, the OMS staff reviews Office programs in consultation with the OMS Advisory Committee. The review is the basis for setting program priorities for the upcoming year. For 1984, the following priorities have been established.

1. Academic Library Program

ALP funding provided by the Mellon Foundation and the Council on Library Resources ended in September 1983. The Association's commitment to ongoing financial support of OMS allows the Office to continue the basic services offered to ARL members through the program. OMS staff will work with the ARL Committee on Management of Research Library Resources to define the availability and costs of studies and consulting services.

The Office expects to operate about 15 library studies with OMS staff sharing the work load with trainees from the Consultant Training Program (CTP). Because the CTP has ended, work will be confined to completing internships of the 1983 group. An ongoing task is to coordinate the assignments of all graduates, assist with their work on projects, and evaluate the results.

With the completion of the six Public Services pilot studies, the study manual now in draft format will be revised and the study made available to libraries generally. Other projects to be completed during 1984 include the Washington Consortium CAP study and the manual for assessment of small library collections.

2. Information Exchange and Publications Program

During 1984, the Systems and Procedures Exchange Center will continue its regular kit/flyer publication schedule, slated to include topics in technology, personnel, and management. Increased attention will be given SPEC file searches for members, to enable the Center to identify trends and topics where more information is needed. Three to five on-demand surveys, one all-member mail survey, and several surveys to selected libraries will be conducted. In addition to

the publication of 10 kits and flyers, the Center will maintain the expanded SPEC index and produce two additional publications including occasional papers. SPEC file searches, document loans, and referrals also will be handled.

3. Organizational Training and Staff Development

In addition to maintaining current programs in this area, the staff will conduct a Management Institute for ARL directors and a series of public services workshops on such topics as promotion of services, improving relations with users, and evaluation of services. The institute for library school faculty funded by the Council on Library Resources also will be designed, conducted, and evaluated (see below).

The 1984 training schedule includes two public Management Skills Institutes with additional Institutes by special request, and three advanced Management Skills Institutes with one of the three scheduled for Australia. Twelve Special Focus Workshops will be designed and conducted.

The Management Training Film Program will undertake a review of current films and update the collection.

4. Applied Research and Development

During 1984, the seven public services research projects funded under the General Electric Foundation grant will be completed and results of project work will be communicated through professional meetings and publications. Presentations are scheduled for the ACRL meeting in Seattle in April and the American Library Association meeting in Dallas in June. Phase II of the National Collections Inventory Project will be in operation. Pilot studies at the three Indiana libraries should be completed or near completion at the end of the year, and staff will be engaged in revising the technical manual and training materials.

The Office has submitted a proposal to the National Endowment for the Humanities for funding to support preservation studies among ARL members. If the proposal is funded, participants will be chosen and studies will begin. Work to design and test a self-study for technical services, based on the preliminary designs completed during 1983, will go forward, including a proposal to an appropriate funding agency. As mentioned in last year's annual report, the Office still plans to assess the feasibility of establishing a Survey Analysis Center.

Two projects are being advanced in cooperation with ARL committees. The institute for library faculty developed on initiatives from the ARL Committee on Library Education/Planning Group will be held during 1984, with the attendant tasks of publicizing the institute, securing participants through a national search process, engaging speakers and facilitators, and evaluating the event. Current work with the ARL Research Libraries' Staffing Task Force includes a meeting to determine possible research and/or program needs in the staffing area.

Bibliography of OMS Publications and Related Documents, 1983

I. General

Gardner, Jeffrey J. "ARL's Preservation Program." Presented February 7, 1983, Music Library Association meetings, Washington, D.C.

_____. "Collection Evaluation." Presentation at the Colloquium on Collection Evaluation, March 22, 1983, University of Nebraska, Lincoln, Neb.

_____. "Evaluation of Library Programs." Presented June 20, 1983, American Theological Library Association meetings, Richmond, Va.

Rosenberg, Jane A. "New Ways to Find Books: Searching, Locating and Information Delivery." Presented at the Organization of American Historians Annual Meeting, April, 1983; to be published in The History Teacher.

_____. "Online Library Catalogs." Organization of American Historians Newsletter (forthcoming); to be republished in Computer Applications for Historians (Organization of American Historians, in press).

Rosenberg, Jane A., and Maureen Sullivan. Resource Notebook on Staff Development. Washington, D.C., Office of Management Studies, June, 1983.

Subject Index to SPEC Kits, 1973-1983. Edited by Jane A. Rosenberg. Washington, D.C., Office of Management Studies, 1983-.

Vasi, John. Budget Allocation Systems for Research Libraries. Occasional Paper no. 7. Washington, D.C., Office of Management Studies, January, 1983.

Webster, Duane E. "Issues in the Financial Management of Research Libraries." Journal of Library Administration 3 (Fall/Winter 1982) 13-22.

_____. "Quality Assurance." Presented at the Medical Library Association meetings, May 30, 1983.

_____. "Risk Capital for Academic Library Development." Fourteenth and Fifteenth Annual Alumni-in-Residence Programs, 1982-1983. School of Library Science, University of Michigan. Ann Arbor, 1983.

II. Collection Analysis Project

McGill University Libraries. Collection Analysis Project Final Report. Montreal, Quebec, 1982.

III. Public Services in Research Libraries

Public Services in Research Libraries: An Assisted Self-Study Manual. Preliminary edition; distribution limited to project test libraries. March, 1983.

IV. Organizational Screening Program

University of Arizona. Science-Engineering Library. Final Report, 1982-83 Planning Study. Tucson, Az., 1983.

V. Academic Library Development Program

University of Miami. Otto G. Richter Library. Academic Library Development Program: Report of the Self-Study. Coral Gables, Fla., June, 1983.

Southeast Missouri State University. Kent Library. Academic Library Development Program: Volume I: Study Team Reports; Volume II: Task Force Preliminary Reports. Cape Girardeau, Mo., February, 1983.

University of Tulsa. The University of Tulsa Libraries - The 1980s and Beyond. The Report of the Academic Library Development Program. June, 1983.

VI. Small College Collection Assessment Project

Atlanta College of Art. The Past, Present and Future: A Final Report of the Collection Assessment Study, 1981-1982. Atlanta, Ga., n.d.

Will W. Alexander Library, Dillard University. Final Report: Measuring the Circulation Use of a Small Academic Library Collection: Collection Analysis. New Orleans, La., n.d.

L. Zenobia Coleman Library, Tougaloo College. Collection Analysis Project: Final Report. Tougaloo, Miss., May, 1983.

Hollis Burke Frissell Library, Tuskegee Institute. Collection Use Study Final Report. N.p., March, 1983.

APPENDIX E

ATTENDANCE AT 104th MEMBERSHIP MEETING
COLORADO SPRINGS, COLORADO

APRIL 25-27, 1984

University of Alabama Libraries
Not Represented

University of Alberta Library
Not Represented

University of Arizona Library
W. David Laird

Arizona State University Library
Donald Riggs

Boston Public Library
Gunnars Rutkovskis

Boston University Library
John Laucus

Brigham Young University Library
Sterling J. Albrecht

University of British Columbia Library
Douglas McInnes

Brown University Library
Merrily E. Taylor

University of California, Berkeley Library
Joseph Rosenthal

University of California, Davis Library
Not Represented

University of California, Irvine Library
Calvin J. Boyer

University of California, Los Angeles Library
Russell Shank

University of California, Riverside Library
Joan Chambers

University of California, San Diego Library
Jill Fatzer

University of California, Santa Barbara Library
Joseph A. Boissé

Canada Inst. for Scientific & Technical Info.
Elmer V. Smith

Case Western Reserve University Libraries
Susan Coté

Center for Research Libraries
Donald B. Simpson

University of Chicago Library
Martin D. Runkle

University of Cincinnati Libraries
Charles B. Osburn

University of Colorado Library
Clyde Walton

Colorado State University Library
Le Moyne W. Anderson

Columbia University Libraries
Patricia Battin

University of Connecticut Library
John P. McDonald

Cornell University Libraries
Not Represented

Dartmouth College Libraries
Margaret A. Otto

University of Delaware Library
Susan Brynteson

Duke University Libraries
Not Represented

Emory University Library
Herbert F. Johnson

University of Florida Libraries
R. Max Willocks

Florida State University Library
Charles E. Miller

Georgetown University Library
Not Represented

University of Georgia Libraries
David F. Bishop

Georgia Institute of Technology Library
Helen Citron

University of Guelph Library
Margaret Beckman

Harvard University Library
Not Represented

University of Hawaii Library
John R. Haak

University of Houston Libraries
Robin Downes

Howard University Libraries
Not Represented

University of Illinois Library
Hugh C. Atkinson

Indiana University Libraries
Elaine F. Sloan

University of Iowa Libraries
Dale M. Bentz

Iowa State University Library
Not Represented

John Crerar Library
Not Represented

Johns Hopkins University Library
Susan K. Martin

University of Kansas Library
James Ranz

University of Kentucky Libraries
James D. Birchfield

Kent State University Libraries
Don Tolliver

Library of Congress
William J. Welsh

Linda Hall Library
Larry X. Besant

Louisiana State University Library
Lance Dickinson

McGill University Library
Not Represented

McMaster University Library
Graham R. Hill

University of Manitoba Libraries
Earl Ferguson

University of Maryland Library
Not Represented

University of Massachusetts Libraries
Richard J. Talbot

Massachusetts Inst. of Technology Libs.
Jay K. Lucker

University of Miami Library
Not Represented

University of Michigan Library
Richard M. Dougherty

Michigan State University Library
Richard E. Chapin

University of Minnesota Libraries
Eldred Smith

University of Missouri Library
Thomas W. Shaughnessy

National Agricultural Library
Joseph H. Howard

National Library of Canada
Marianne Scott

National Library of Medicine
Lois A. Colaianni

University of Nebraska-Lincoln Libraries
Not Represented

Newberry Library
Not Represented

University of New Mexico Library
Paul Vassallo

New York Public Library
David H. Stam

New York State Library
Peter Paulson

New York University Libraries
Carlton Rochell

University of North Carolina Libraries
James F. Govan

North Carolina State University
I.T. Littleton

Northwestern University Libraries
John P. McGowan

University of Notre Dame Libraries
Robert C. Miller

Ohio State University Libraries
Not Represented

University of Oklahoma Library
Sul H. Lee

Oklahoma State University Library
Roscoe Rouse

University of Oregon Library
George W. Shipman

University of Pennsylvania Libraries
Richard De Gennaro

Pennsylvania State University Library
Not Represented

University of Pittsburgh Libraries
Anne Woodsworth

Princeton University Library
Not Represented

Purdue University Library
Not Represented

Queen's University Library
Margot B. McBurney

Rice University Library
Samuel Carrington

University of Rochester Libraries
James F. Wyatt

Rutgers University Library
Shirley Bolles

University of Saskatchewan Library
Nancy A. Brown

Smithsonian Institution Libraries
Robert Maloy

University of South Carolina Library
Kenneth E. Toombs

University of Southern California Library
Margaret Johnson

Southern Illinois University Library
Kenneth G. Peterson

Stanford University Libraries
Not Represented

State Univ. of New York at Albany Libraries
Joseph Z. Nitecki

State Univ. of New York at Buffalo Libraries
Stanton F. Biddle

State Univ. of New York at Stony Brook Library
John B. Smith

Syracuse University Libraries
Donald Anthony

Temple University Library
Sharon Hogan

University of Tennessee Libraries
Donald R. Hunt

University of Texas Libraries
Harold Billings

Texas A & M University Library
Irene B. Hoadley

University of Toronto Libraries
Not Represented

Tulane University Library
Philip E. Leinbach

University of Utah Libraries
Roger K. Hanson

Vanderbilt University Library
Malcolm Getz

Virginia Polytechnic Inst. Libraries
H. Gordon Bechanan

University of Virginia Libraries
Not Represented

University of Washington Library
Charlene Renner

Washington State University Library
Allene F. Schnaitter

Washington University Libraries
Charles Churchwell

Wayne State University Libraries
Peter Spyers-Duran

University of Waterloo Library
Not Represented

University of Western Ontario Library
Robert Lee

University of Wisconsin Libraries
Nancy Marshall

Yale University Libraries
Jack Siggins

York University Libraries
Ellen Hoffmann

ATTENDANCE BY THE MEMBERSHIP - NAME INDEX

Albrecht, Sterling J.	Brigham Young University Library
Anderson, Le Moyne W.	Colorado State University Library
Atkinson, Hugh C.	University of Illinois Library
Battin, Patricia	Columbia University Libraries
Bechanan, Gordon H.	Virginia Poly. Inst. and State Univ. Libraries
Beckman, Margaret	University of Guelph Library
Bentz, Dale M.	University of Iowa Libraries
Besant, Larry X.	Linda Hall Library
Biddle, Stanton F.	State Univ. of New York at Buffalo Libraries
Bishop, David F.	University of Georgia Libraries
Birchfield, James D.	University of Kentucky Libraries
Bolles, Shirley	Rutgers University Library
Boyer, Calvin J.	University of California, Irvine Library
Brown, Nancy	University of Saskatchewan Library
Brynteson, Susan	University of Delaware Library
Carrington, Samuel	Rice University Library
Chambers, Joan	University of California, Riverside Library
Chapin, Richard E.	Michigan State University Library
Churchwell, Charles	Washington University Libraries
Citron, Helen	Georgia Institute of Technology Library
Colaianni Lois A.	National Library of Medicine
Coté, Susan	Case Western Reserve University Library
De Gennaro, Richard	University of Pennsylvania Libraries
Dickinson, Lance	Lousiana State University Library
Dougherty, Richard M.	University of Michigan Library
Downes, Robin	University of Houston Libraries
Fatzer, Jill	University of California, San Diego Library
Ferguson, Earl	University of Manitoba Libraries
Govan, James F.	University of North Carolina Libraries
Haak, John R.	University of Hawaii Library
Hanson, Roger K.	University of Utah Libraries
Hill, Graham R.	McMaster University Library
Hoadley, Irene B.	Texas A&M University Library
Hoffmann, Ellen	York University Libraries
Hogan, Sharon	Temple University Libraries
Howard, Joseph H.	National Agricultural Library
Hunt, Donald R.	University of Tennessee Libraries
Johnson, Herbert F.	Emory University Library
Johnson, Margaret	University of Southern California Library
Laird, W. David	University of Arizona Library
Laucas, John	Boston University Library
Lee, Robert	University of Western Ontario Libraries
Lee, Sul H.	University of Oklahoma Library

Leinbach, Philip E.	Tulane University Library
Littleton, I.T.	North Carolina State University Library
Lucker, Jay R.	Massachusetts Institute of Technology Libraries
McBurney, Margot B.	Queen's University Library
McDonald, John P.	University of Connecticut Library
McGowan, John P.	Northwestern University Libraries
Maloy, Robert	Smithsonian Institution Libraries
Marshall, Nancy	University of Wisconsin Libraries
Martin, Susan K.	Johns Hopkins University Library
Miller, Charles E.	Florida State University Library
Miller, Robert C.	University of Notre Dame Libraries
Nitecki, Joseph Z.	State Univ. of New York at Albany Libraries
Osburn, Charles B.	University of Cincinnati Libraries
Otto, Margaret A.	Dartmouth College Libraries
Paulson, Peter	New York State Library
Peterson, Kenneth G.	Southern Illinois University Library
Ranz, James	University of Kansas Library
Renner, Charlene	University of Washington Library
Riggs, Donald	Arizona State University Library
Rochell, Carlton	New York University Libraries
Rosenthal, Joseph	University of California, Berkeley Library
Rouse, Roscoe	Oklahoma State University Library
Runkle, Martin D.	University of Chicago Library
Rutkovskis, Gunnars	Boston Public Library
Schnaitter, Allene F.	Washington State University Library
Scott, Marianne	National Library of Canada
Shank, Russell	University of California, Los Angeles Library
Shaughnessy, Thomas W.	University of Missouri Library
Shipman, George W.	University of Oregon Library
Siggins, Jack	Yale University Libraries
Simpson, Donald B.	Center for Research Libraries
Sloan, Elaine F.	Indiana University Libraries
Smith, Eldred	University of Minnesota Libraries
Smith, Elmer, V.	Canada Inst. for Scientific & Technical Info.
Smith, John B.	State Univ. of New York at Stony Brook Library
Stam, David H.	New York Public Library
Talbot, Richard J.	University of Massachusetts Libraries
Taylor, Merrily E.	Brown University Library
Tolliver, Don	Kent State University Libraries
Toombs, Kenneth E.	University of South Carolina Libraries
Vassallo, Paul	University of New Mexico Library
Walton, Clyde	University of Colorado Library
Welsh, William J.	Library of Congress
Willocks, R. Max	University of Florida Libraries
Woodsworth, Anne	University of Pittsburgh Libraries
Wyatt, James F.	University of Rochester Libraries

Guests

Walter G. Bolter (speaker)	Bethesda Research Institute
Laura Bornholdt	Lilly Endowment, Inc.
Rowland C. Brown	OCLC, Inc.
Jill B. Fatzer	University of California, San Diego (CLR Intern)
Jeffrey Field	National Endowment for the Humanities
John Finzi	Library of Congress
Ray Fry	Department of Education
Richard W. Greene	Carnegie Corporation of New York
Warren J. Haas	Council on Library Resources
Carol Henderson	American Library Association, Washington Office
C. Lee Jones	Council on Library Resources
Deanna Marcum	Council on Library Resources
Richard W. McCoy	Research Libraries Group
Donald J.Muccino (speaker)	OCLC, Inc.
Susan Rhee	Columbia University (CLR Intern)
Gordon Rowley	Washington University (CLR Intern)
JoAn S. Segal (speaker)	Bibliographic Center for Research
Helen Spalding	Northwestern University (CLR Intern)
Peter G. Sparks	Library of Congress
William A. Stolfus (speaker)	Colorado State University
C. Thomas Taylor (speaker)	UNINET, Inc.
Sarah Thomas	University of Georgia (CLR Intern)
William F. Utlaut (speaker)	Institute for Telecommunications Sciences, National Telecommunications & Information Administration
John Vaughn	Association of American Universities
Julie Virgo	Association of College and Research Libraries
Robert M. Warner	National Archives and Records Service
Robert Wedgeworth	American Library Association

ARL Staff

Shirley Echelman, Executive Director
Nicola Daval, Information Officer
Alex Lichtenstein, Administrative Assistant
Duane E. Webster, Director, Office of Management Studies
Jeffrey J. Gardner, Associate, Office of Management Studies
Maxine K. Sitts, Information Services Specialist, Office of Management Studies

APPENDIX F

ASSOCIATION OF RESEARCH LIBRARIES
OFFICERS, BOARD OF DIRECTORS, COMMITTEES AND TASK FORCES

APRIL 1984

ARL OFFICERS AND BOARD FOR 1983-84

Eldred Smith, President
Richard J. Talbot, Vice President & President-Elect
James F. Govan, Past President

Hugh C. Atkinson	(Oct. 1985)
Patricia Battin	(Oct. 1985)
Graham R. Hill	(Oct. 1986)
Herbert F. Johnson	(Oct. 1986)
W. David Laird	(Oct. 1986)
William. J. Studer	(Oct. 1984)
Paul Vassallo	(Oct. 1985)
Anne Woodsworth	(Oct. 1984)

ADVISORY COMMITTEES

Center for Chinese Research Materials

Samuel Chu, Ohio State University (1986)
Thomas Kennedy, Washington, State University (1986)
Douglas McInnes (1985)
Antony Marr, Yale University (1984)
Lyman Van Slyke, Stanford University (1984)
Eugene Wu, Harvard University, Chair (1985)

ARL Microform Project Cataloging Program

Duane Bogenschneider, Microfilming Corporation of America, Inc.
Joseph A. Boisse
Robert Grey Cole, University of Mississippi
Linda Hamilton, Research Publications, Inc.
Joseph Howard
Mary Ellen Jacob, OCLC, Inc.
Tina Kass, Research Libraries Group
Elaine Sloan
Del Williams, Western Illinois University

ARL Microform Project Preservation Program

Harold W. Billings
Margaret Child, Smithsonian Institution Libraries
Nancy Gwinn
Margaret A. Otto
Andrew Raymond, Northeast Document Conservation Center
Peter Sparks, Library of Congress
David H. Stam
Clyde Walton
David C. Weber

CONSER A & I Coverage Project

Linda Bartley, Library of Congress
Brett Butler, Information Access Corporation
Thomas Delsey, National Library of Canada
Mary Ellen Jacob, OCLC, Inc.
Jay K. Lucker
James L. Wood, Chemical Abstract Service

National Collections Inventory Project

David Farrell, Indiana University
Leslie Hume, Research Libraries Group
Paul Mosher, Stanford University
Susan Nutter, Massachusetts Institute of Technology
Elaine F. Sloan
David H. Stam

STANDING COMMITTEES

Committee on Nominations

ARL Vice President, Chair

Committee on the Management of Research Libraries

Joan Chambers (1985)
Richard De Gennaro (1985)
Herbert Johnson, (ex officio as Chair of Subcommittee on ARL Statistics)
Sul H. Lee (1986)
Susan K. Martin (1986)
Clyde Walton (1984)
Jay K. Lucker, Chair (1984)

Committee on ARL Statistics

Calvin J. Boyer (1985)
Gordon Fretwell, University of Massachusetts (1985)
Robert Lee (1985)
Kendon Stubbs, University of Virginia (1985)
Herbert F. Johnson, Chair (1984)

Public Services Project Advisory Committee

Harold W. Billings
Robin Downes
Jay K. Lucker
Susan K. Martin
Robert C. Miller
Merrily Taylor
Paul Vassallo

Committee on Library Education

Irene B. Hoadley (1984)
Edward Holley, University of North Carolina (1985)
Herbert White, Indiana University (1984)
Merrily Taylor (1985)
Margot B. McBurney, Chair (1984)

Membership Committee on Nonuniversity Libraries

Donald C. Anthony (1985)
Larry Besant (1986)
Robert Maloy (1985)
Donald Riggs (1986)
Marilyn Sharrow, Chair (1985)

Coordinating Committee on Collections and Access

Dale Bentz	(1985)
Susan Brynteson	(1985)
Robert Miller	(ex officio as Chair of the Committee on Collection Development)
Margaret Otto	(ex officio as Chair of the Committee on Preservation of Research Library Materials)
Joseph Rosenthal	(ex officio as Chair of the Committee on Bibliographic Control)
Elaine Sloan, Chair	(1986)

Committee on Bibliographic Control

Henriette Avram, Library of Congress Liaison
Margaret Beckman (1985)
David Bishop (1985)
D. Kaye Gapen (1985)
Joseph H. Howard (1984)
C. Lee Jones, Council on Library Resources Liaison
Martin D. Runkle (1985)
Joseph Rosenthal, Chair (1984)

Committee on Collection Development

Marianne Scott (1985)
Charles Miller (1986)
Joseph Boissé (1986)
Robin Downes (1985)
Joseph Dagnese (1985)
Robert Miller, Chair (1986)
John Finzi, L.C. Liaison

Committee on Preservation of Research Library Materials

Harold W. Billings (1985)
John Laucus (1986)
Peter Sparks, Library of Congress Liaison
David H. Stam (1985)
David C. Weber (1985)
Margaret A. Otto, Chair (1984)

ARL TASK FORCES

Task Force on Research Library Staffing (1984)

Millicent D. Abell
Nancy A. Brown
Irene B. Hoadley
John P. McGowan
Russell Shank
Eldred Smith, Chair

TASK FORCES ON IMPLEMENTATION OF THE ARL PLAN OF ACTION

Task Force on Scholarly Communication (Objective One)

Hugh C. Atkinson
Stuart Forth
D. Kaye Gapen
Martin Runkle
George Shipman
William Studer
Charles Osburn, Chair

REPRESENTATIVES

ALA Committee on Cataloging: Description and Access ..... George Gibbs, UCLA
ALA Interlibrary Loan Committee ..... Joan Chambers
ALA Statistics Coordinating Committee ..... Nicola Daval
ANSI Committee Z39 ..... Joanne Harrar
CONSER Advisory Group ..... Carol Mandel
Eighteenth-Century Short Title Catalogue ..... Ray Frantz
Joint Committee on Union List of Serials ..... William Budington
LC Cataloging-in-Publication Advisory Group ..... George Gibbs
LC Network Advisory Committee ..... William Studer
Society of American Archivists ..... Herbert Finch, Cornell
Universal Serials & Book Exchange ..... Joanne Harrar
National Conservation Advisory Committee ..... David Stam
Voting Representative to IFLA ..... Shirley Echelman
Voting Representative to ANSI Committee Z39 ..... Shirley Echelman
RLG Conspectus Development Task Force ..... David Farrell

APPENDIX G

MEMBERSHIP LIST

University of Alabama Libraries
P.O. Box S
University, Alabama 35486
D. Kaye Gapen, Dean of Univ. Libs.
(205) 348-7561

University of Alberta Library
Edmonton, Alberta, Canada T6G 2JB
Peter Freeman, Librarian
(403) 432-3790

University of Arizona Library
Tucson, Arizona 85721
W. David Laird, Librarian
(602) 626-2101

Arizona State University Library
Tempe, Arizona 85281
Donald Riggs, Librarian
(602) 965-3417

Boston Public Library
Copley Square
Boston, Massachusetts 02117
Liam M. Kelly, Acting Librarian
(617) 536-5400

Boston University Library
Boston, Massachusetts 02215
John Laucus, Director
(617) 353-3710

Brigham Young University Library
324 Lee Library
Provo, Utah 84602
Sterling J. Albrecht, Univ. Libn.
(801) 378-2905

University of British Columbia Library
Vancouver, B.C., Canada V6T 1W5
Douglas McInnes, Librarian
(604) 228-2298

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Providence, Rhode Island 02912
Merrily Taylor, Librarian
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Berkeley, California 94720
Joseph Rosenthal, Director
(415) 642-3773

University of California Library, Davis
Davis, California 95616
Bernard Kreissman, Librarian
(916) 752-2110

University of California, Irvine
The University Library
P.O. Box 19557
Irvine, California 92713
Calvin J. Boyer, University Librarian
(714) 833-5212

University of California Library, Los Angeles
Los Angeles, California 90024
Russell Shank, Librarian
(213) 825-1201

University of California Library, Riverside
P.O. Box 5900
Riverside, California 92517
Joan Chambers, University Librarian
(714) 787-3221

University of California, San Diego
The University Library
La Jolla, California 92037
Millicent D. Abell, Librarian
(619) 452-3061

University of California, Santa Barbara
The University Library
Santa Barbara, California 93106
Joseph A. Boissé, Librarian
(805) 961-3256

Canada Institute for Scientific
& Technical Information
National Research Council of Canada
Ottawa, Canada K1A OS2
Elmer V. Smith, Director
(613) 993-2341

Case Western Reserve University Libraries
Cleveland, Ohio 44106
Susan Coté, Director
(216) 368-2990

Center for Research Libraries
6050 South Kenwood Avenue
Chicago, Illinois 60637
Donald B. Simpson, Director
(312) 955-4545

University of Chicago Library
Chicago, Illinois 60637
Martin D. Runkle, Director
(312) 962-8744

University of Cincinnati Libraries
Cincinnati, Ohio 45221
Charles B. Osburn, Vice Provost
for Univ. Libraries
(513) 475-2218

University of Colorado Library
Boulder, Colorado 80309
Clyde Walton, Director
(303) 492-7511

Colorado State University Library
Fort Collins, Colorado 80521
Le Moyne W. Anderson, Director
(303) 491-5911

Columbia University Libraries
New York, New York 10027
Patricia Battin, Vice President
& University Librarian
(212) 280-2247

University of Connecticut Library
Storrs, Connecticut 06268
John P. McDonald, Director
(203) 486-2219

Cornell University Libraries
Ithaca, New York 14850
Louis E. Martin, Univ. Libn.
(607) 256-3689

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603) 646-2235

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Herbert F. Johnson, Director
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Gainesville, Florida 32603
Gustave A. Harrer, Director
(904) 392-0341

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Tallahassee, Florida 32306
Charles E. Miller, Director
(904) 644-5211

Georgetown University Library
Washington, D.C. 20007
Joseph E. Jeffs, Director
(202) 625-4095

University of Georgia Libraries
Athens, Georgia 30601
David Bishop, Director
(404) 542-2716

Georgia Institute of Technology
Price Gilbert Memorial Library
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E. G. Roberts, Director
(404) 894-4510

University of Guelph Library
Guelph, Ontario, Canada N1G 2W1
Margaret Beckman, Chief Libn.
(519) 824-4120

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Wadsworth House
Cambridge, Massachusetts 02138
Oscar Handlin, Director
(617) 495-2401

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2550 The Mall
Honolulu, Hawaii 96822
John R. Haak, Director
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University of Houston Libraries
Houston, Texas 77004
Robin Downes, Director
(713) 749-4241

Howard University Libraries
5000 Harvard Place, N.W.
Box 1059
Washington, D.C. 20059
Kenneth Wilson, Acting Director
(202) 636-7234

University of Illinois Library
1408 West Gregory Drive
Urbana, Illinois 61801
Hugh C. Atkinson, Univ. Librarian
(217) 333-0790

Indiana University Libraries
Bloomington, Indiana 47401
Elaine F. Sloan, Dean of Univ. Librs.
(812) 335-3404

University of Iowa Libraries
Iowa City, Iowa 52242
Dale M. Bentz, Univ. Librarian
(319) 353-4450

Iowa State University Library
Ames, Iowa 50011
Warren B. Kuhn, Dean of Lib. Services
(515) 294-1442

John Crerar Library
35 West 33rd Street
Chicago, Illinois 60616
William S. Budington, Director
(312) 225-2526

Johns Hopkins University Library
The Milton S. Eisenhower Library
Baltimore, Maryland 21218
Susan K. Martin, Librarian
(301) 338-8325

University of Kansas Library
Lawrence, Kansas 66044
James Ranz, Dean of Libraries
(913) 864-3601

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Lexington, Kentucky 40506
Paul A. Willis, Director
(606) 257-3801

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Kent, Ohio 44242
Dean Keller, Interim Director
(216) 672-2962

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Washington, D.C. 20540
Daniel J. Boorstin, Librarian
(202) 287-5205

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Kansas City, Missouri 64110
Larry X. Besant, Director
(816) 363-4600

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Baton Rouge, Louisiana 70803
Lance Dickinson, Acting Director
(504) 388-2217

McGill University Library
3459 McTavish Street
Montreal, Canada H3A 1Y1
Hans Möller, Acting Director
(514) 392-4949

McMaster University Library
1280 Main Street West
Hamilton, Ontario, Canada L8S 4L6
Graham R. Hill, University Librarian
(416) 525-9140 Local 4359

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Winnipeg, Manitoba R3T 2N2
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Earl Ferguson, Director
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College Park, Maryland 20742
H. Joanne Harrar, Librarian
(301) 454-3011

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(413) 545-0284

Massachusetts Inst. of Technology Libs.
Cambridge, Massachusetts 02139
Jay K. Lucker, Director
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Coral Gables, Florida 33124
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Richard E. Chapin, Director
(517) 355-2341

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Eldred Smith, Director
(612) 373-3097

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Thomas W. Shaughnessy, Director
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Beltsville, Maryland 20705
Joseph H. Howard, Director
(301) 344-4248

National Library of Canada
395 Wellington Street
Ottawa, Ont., Canada K1A 0N4
Marianne Scott, Librarian
(613) 996-1623

National Library of Medicine
Bethesda, Maryland 20014
Harold M. Schoolman, Acting Director
(301) 496-6221

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The University Libraries
Lincoln, Nebraska 68588-0410
Gerald A. Rudolph, Dean of Libraries
(402) 472-2526

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60 West Walton Street
Chicago, Illinois 60610
Joel L. Samuels, Dir. of Lib. Sers.
(312) 943-9090

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General Library
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Paul Vassallo, Dean of Lib. Sers.
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New York, New York 10018
David H. Stam, Director of the
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Cultural Education Center
Empire State Plaza
Albany, New York 12234
Joseph F. Shubert, State Librarian
(518) 474-5930

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New York, New York 10003
Carlton C. Rochell, Dean of Libraries
(212) 598-7676

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Chapel Hill, North Carolina 27515
James F. Govan, Director
(919) 962-1301

North Carolina State University
D.H. Hill Library
Box 5007
Raleigh, North Carolina 27650
I.T. Littleton, Director
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Evanston, Illinois 60211
John P. McGowan, Librarian
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Robert C. Miller, Librarian
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William J. Studer, Director
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Sul H. Lee, Dean, University Librs.
(405) 325-2611 or 2614

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Stillwater, Oklahoma 74078
Roscoe Rouse, Dean of Lib. Ser.
(405) 624-6321

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Eugene, Oregon 97403
George W. Shipman, Univ. Libn.
(503) 686-3056

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Philadelphia, Pennsylvania 19104
Richard De Gennaro, Director
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University Park, Pennsylvania 16802
Stuart Forth, Dean of Univ. Libraries
(814) 865-0401

University of Pittsburgh
826 Cathedral of Learning
Pittsburgh, Pennsylvania 15260
Anne Woodsworth, Assoc. Provost
for Libaries
(412) 624-0907

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Joseph M. Dagnese, Director
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Douglas Library
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Margot B. McBurney, Chief Libn.
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Houston, Texas 77001
Samuel Carrington, Director
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James F. Wyatt, Director
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Hendrik Edelman, Univ. Libn.
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Saskatoon, Canada S7N OWO
Nancy A. Brown, Univ. Libn.
and Director of Libraries
(306) 343-4216

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Constitution Avenue at 10th St., N.W.
Washington, D.C. 20560
Robert Maloy, Director
(202) 357-2240

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Columbia, South Carolina 29208
Kenneth E. Toombs, Director of Libs
(803) 777-3142

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Los Angeles, California 90007
Roy L. Kidman, Librarian
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Carbondale, Illinois 62901
Kenneth G. Peterson, Dean of
Library Affairs
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David C. Weber, Director
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Libraries
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Albany, New York 12222
Joseph Z. Nitecki, Director
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Harold W. Billings, Director
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College Station, Texas 77843
Irene B. Hoadley, Director
(409) 845-8111

University of Toronto Libraries
Toronto, Ont., Canada M5S 1A5
Marilyn Sharrow, Chief Librarian
(416) 978-2292

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Philip E. Leinbach, Librarian
(504) 865-5131

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Salt Lake City, Utah 84112
Roger K. Hanson, Director
(801) 581-8558

Vanderbilt University Library
413 21st Avenue South
Nashville, Tennessee 37203
Malcolm Getz, Director
(615) 322-2834

Virginia Polytechnic Inst. and State Univ.
Blacksburg, Virginia 24061
H. Gordon Bechanan, Director of Libs.
(703) 961-5593

University of Virginia
Alderman Library
Charlottesville, Virginia 22901
Ray Frantz, Jr., Librarian
(804) 924-3026 or 7849

University of Washington Library
Seattle, Washington 98195
Merle N. Boylan, Director
(206) 543-1760

Washington State University Library
Pullman, Washington 99163
Allene F. Schnaitter, Director
(509) 335-4557

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St. Louis, Missouri 63130
Charles Churchwell, Librarian
(314) 889-5400

University of Waterloo
Waterloo, Ontario, Canada N2L 3G1
Murray C. Shepherd, Univ. Libn.
(519) 885-1211)

Wayne State University Libraries
Detroit, Michigan 48202
Peter Spyers-Duran, Director
(313) 577-4020

University of Western Ontario
DB Weldon Library
London, Ontario, Canada
Robert Lee, Director of Libs.
(519) 679-3165

University of Wisconsin Libraries
Madison, Wisconsin 53706
D. Kaye Gapen, Director
(608) 262-3521

Yale University Libraries
New Haven, Connecticut 06520
Rutherford D. Rogers, Librarian
(203) 436-2456

York University Libraries
4700 Keele Street
Downsview, Ontario, Canada M3J 1P3
Ellen Hoffmann, Director
(416) 667-2235

APPENDIX H

ASSOCIATION OF RESEARCH LIBRARIES

REPORT ON FINANCIAL STATEMENTS

(with supplementary information)
(Modified Cash Basis)

YEARS ENDED DECEMBER 31, 1983 AND 1982

ASSOCIATION OF RESEARCH LIBRARIES

YEARS ENDED DECEMBER 31, 1983 AND 1982

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GARNER, BLOOM & CO., CHARTERED
CERTIFIED PUBLIC ACCOUNTANTS

8630 FENTON STREET, SUITE 708
SILVER SPRING, MARYLAND 20910
301-585-5300

Board of Directors
Association of Research Libraries
Washington, DC

We have examined the statements of assets and liabilities arising from cash transactions of the Association of Research Libraries as of December 31, 1983 and 1982, and the related statements of revenue collected and expenses paid and changes in fund balance and changes in cash for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 1, the Association's policy is to prepare its financial statements on a modified basis of cash receipts and disbursements; consequently, certain revenue and the related assets are recognized when received rather than when earned, and certain expenses are recognized when paid rather than when the obligation is incurred. Accordingly, the accompanying financial statements are not intended to present financial position and results of operations in conformity with generally accepted accounting principles.

In our opinion, the financial statements mentioned present fairly the assets and liabilities arising from cash transactions of the Association of Research Libraries as of December 31, 1983 and 1982, and the revenue collected and expenses paid and changes in fund balance, and changes in cash for the years then ended, on the basis of accounting described in Note 1, applied on a consistent basis.

Garner, Bloom & Co., Chartered

February 17, 1984

ASSOCIATION OF RESEARCH LIBRARIES

STATEMENTS OF ASSETS AND LIABILITIES
ARISING FROM CASH TRANSACTIONS
(Modified Cash Basis)

ASSETS

	December 31, 1983	December 31, 1982
Cash, including certificates of deposit of $416,326 in 1983 and $525,533 in 1982	$ 699,727	$ 685,649
Deposits	2,478	1,163
Furniture and equipment, less accumulated depreciation (Notes 3 and 5)	59,137	52,678
Total	$ 761,342	$ 739,490

LIABILITIES AND FUND BALANCES

Special programs for which the Association is accountable to the grantors	$ 252,996	$ 242,762
Obligations under capital lease (Note 5)	13,407	
Payroll taxes withheld		2,170
Total liabilities	266,403	244,932
General Operating Fund	125,261	127,810
Office of Management Studies Fund	50,839	
Chinese Center Revolving Fund	318,839	366,748
Total fund balances	494,939	494,558
Total	$ 761,342	$ 739,490

See accompanying notes to financial statements

ASSOCIATION OF RESEARCH LIBRARIES

GENERAL OPERATING FUND
STATEMENTS OF REVENUE COLLECTED AND
EXPENSES PAID AND CHANGES IN FUND BALANCE
(Modified Cash Basis)

	Year ended December 31,	
	1983	1982
Revenue		
Dues	$ 450,450	$ 372,900
Interest	26,928	38,005
Publications	10,742	10,681
	488,120	421,586
Expenses (Notes 4 and 5)	514,166	463,079
Less administrative expenses charged to special programs	(23,497)	(26,801)
Net expenses	490,669	436,278
Deficiency of revenue collected over expenses paid	(2,549)	(14,692)
Fund balance, beginning of year	127,810	142,502
Fund balance, end of year	$ 125,261	$ 127,810

See accompanying notes to financial statements

ASSOCIATION OF RESEARCH LIBRARIES

OFFICE OF MANAGEMENT STUDIES
STATEMENT OF REVENUE COLLECTED AND
EXPENSES PAID AND CHANGES IN FUND BALANCE
(Modified Cash Basis)

YEAR ENDED DECEMBER 31, 1983

Revenue	
Publications	$ 14,593
Training	8,978
Consultation	6,400
	29,971
Expenses (Notes 4 and 5)	85,756
Deficiency of revenue collected over expenses paid	(55,785)
Transfer of Academic Library Program Fund balance	106,624
Fund balance, end of year	$ 50,839

See accompanying notes to financial statements

ASSOCIATION OF RESEARCH LIBRARIES

CHINESE CENTER REVOLVING FUND
STATEMENTS OF REVENUE COLLECTED AND EXPENSES PAID AND CHANGES IN FUND BALANCE
(Modified Cash Basis)

	Year ended December 31,	
	1983	1982
Revenue		
Grants	$ 50,000	$ 66,667
Interest income	29,333	52,319
Sales of publications	94,927	69,869
	174,260	188,855
Expenses (Notes 4 and 5)	222,169	250,266
Deficiency of revenue collected over expenses paid	(47,909)	(61,411)
Fund balance, beginning of year	366,748	428,159
Fund balance, end of year	$ 318,839	$ 366,748

See accompanying notes to financial statements

ASSOCIATION OF RESEARCH LIBRARIES

STATEMENTS OF CHANGES IN CASH
(Modified Cash Basis)

	Year ended December 31, 1983	1982
SOURCES OF CASH		
Excess (deficiency) of revenue collected over expenses paid		
General Operating Fund	$ (2,549)	$ (18,101)
Office of Management Studies	(55,785)	
Chinese Center Revolving Fund	(47,909)	(61,411)
Special Programs	116,858	26,311
Total	10,615	(53,201)
Add item not requiring the outlay of cash - Depreciation	13,005	7,479
Cash provided (absorbed) by operations	23,620	(45,722)
Sale of equipment	6,805	
Additions to obligations under capital lease	15,267	(1,354)
Total	45,692	(47,076)
USES OF CASH		
Decrease in payroll taxes withheld	2,170	205
Purchase of furniture and equipment	26,269	41,556
Increase in deposits	1,315	698
Reductions of obligations under capital lease	1,860	
Total	31,614	42,459
Increase (decrease) in cash	14,078	(89,535)
Cash, beginning of year	685,649	775,184
Cash, end of year	$ 699,727	$ 685,649

See accompanying notes to financial statements

ASSOCIATION OF RESEARCH LIBRARIES

NOTES TO FINANCIAL STATEMENTS

---

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of accounting

The Association's policy is to prepare its financial statements on a modified cash basis that includes recording depreciation and amortization on capitalized assets, accrued liabilities for special programs and federal and state income taxes withheld. Under this basis, revenues are recognized when collected rather than when earned, and expenditures are generally recognized when paid rather than when incurred. Consequently, dues receivable, trade accounts payable, prepaid expenses and certain accrued expenses are not included in the financial statements. If an expenditure results in the creation of an asset having an estimated useful life which extends substantially beyond the year of acquisition, the expenditure is capitalized and depreciated or amortized over the estimated useful life of the asset.

Fund accounting

To ensure observance of limitations and restrictions placed on the use of resources available to the Association, the accounts of the Association are maintained in accordance with the principles of fund accounting. This is the procedure by which resources for various purposes are classified for accounting and reporting purposes into funds established according to their nature and purposes. Separate accounts are maintained for each fund; accordingly, all financial transactions have been recorded and reported by fund group.

Grants restricted by the donor or grantor for specific programs are classified in the liabilities section of the accompanying statements of assets and liabilities arising from cash transactions as "special programs for which the Association is accountable to the grantors".

Furniture, equipment and depreciation

Furniture and equipment are recorded at cost. Depreciation of furniture and equipment is provided on the straight-line method over the estimated useful lives of the assets.

ASSOCIATION OF RESEARCH LIBRARIES

NOTES TO FINANCIAL STATEMENTS (CONTINUED)

2. INCOME TAXES

The Association is exempted from income taxes under Internal Revenue Code Section 501(c)(3) and applicable District of Columbia law.

3. FURNITURE AND EQUIPMENT

Furniture and equipment are categorized as follows:

	December 31, 1983	December 31, 1982
Association of Research Libraries	$ 51,786	$ 54,243
Academic Library Program (OMS)	30,971	21,343
Center for Chinese Research Materials	29,062	24,949
	111,819	100,535
Less: Accumulated depreciation	52,682	47,857
Furniture and equipment less accumulated depreciation	$ 59,137	$ 52,678

4. RETIREMENT PLAN

The Association has a retirement plan that covers substantially all full-time employees. Contributions to the plan are based on a percentage of salary for enrolled staff members. Total amounts paid in by the Association were $69,010 and $61,099 for 1983 and 1982 respectively.

ASSOCIATION OF RESEARCH LIBRARIES

NOTES TO FINANCIAL STATEMENTS (CONTINUED)

5. LEASES

The Association leases its office space under an operating lease that expires on December 31, 1985, and leases telephone equipment under a capital lease that expires on February 15, 1988.

Furniture and equipment includes leased property under a capital lease at December 31, 1983 as follows:

Cost	$ 16,455
Less: Accumulated amortization	1,371
	$ 15,084

The future minimum lease payments as of December 31, 1983 are as follows:

	Capital Lease	Operating Lease
1984	$ 4,358	$ 63,683
1985	4,358	70,387
1986	4,358	
1987	4,358	
1988	692	
Total minimum lease payments	18,124	$ 134,070
Less: amount representing interest	4,717	
Present value of net minimum lease payemnts	$ 13,407	

Total rent and storage charges for the operating lease were $61,408 for 1983 and $56,969 for 1982.

SUPPLEMENTARY INFORMATION

Our examinations of the financial statements included in the preceding section of this report were directed to an expression of our opinion on those financial statements taken as a whole. The supplementary information included on pages 11 through 15 is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the examination of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Gamer, Bloom & Co., Chartered
Certified Public Accountants

Silver Spring, Maryland
February 17, 1984

ASSOCIATION OF RESEARCH LIBRARIES

GENERAL OPERATING FUND - SCHEDULES OF EXPENSES
(Modified Cash Basis)

	Year ended December 31, 1983	1982
Staff expenses		
Employee benefits	$ 51,536	$ 42,812
Salaries	199,092	183,777
Travel and entertainment	9,338	12,566
Total staff expenses	259,966	239,155
Administrative expenses		
Communications	7,379	8,195
Depreciation	6,881	4,300
Dues	7,521	5,985
Insurance	1,278	3,002
Periodicals and subscriptions	1,717	1,909
Professional fees	20,182	18,361
Rent	20,943	14,922
Stationary and office	27,271	21,715
Total administrative expenses	93,172	78,389
Programs and services expenses		
Funding for special programs -		
Microform	1,087	2,594
Office of Management Studies	95,000	75,000
Honorarium	1,350	
Miscellaneous	886	
Publications	19,237	13,710
Total programs and services expenses	117,560	91,304
ARL meetings and travel expenses		
ARL sponsored membership travel	1,125	1,842
Board meetings	9,960	5,869
Committees and task forces	10,055	14,837
Conferences	12,901	22,614
Executive committee meetings	5,361	3,392
Staff expenses	4,066	5,677
Total ARL meetings and travel expenses	43,468	54,231
Total	$ 514,166	$ 463,079

ASSOCIATION OF RESEARCH LIBRARIES

OFFICE OF MANAGEMENT STUDIES - SCHEDULE OF EXPENSES
(Modified Cash Basis)

YEAR ENDED DECEMBER 31, 1983

Consulting, computer and subcontractors	$ 800
Employee benefits	9,520
Miscellaneous	506
Office expense	1,862
Payroll taxes	1,794
Periodicals and subscriptions	304
Postage	1,762
Printing	5,425
Rent and storage	8,062
Salaries	45,998
Telephone	1,539
Training	3,963
Travel	4,221
Total	$ 85,756 (a)

(a) Expenses for the period 10/1/83 - 12/31/83 (after completion of CLR funding)

ASSOCIATION OF RESEARCH LIBRARIES

CHINESE CENTER REVOLVING FUND - SCHEDULES OF EXPENSES
(Modified Cash Basis)

	Year ended December 31, 1983	1982
Allocated administrative charges	$ 23,497	$ 26,801
Consulting, computer and subcontractors	2,635	2,920
Depreciation	3,068	1,471
Employee benefits	18,686	18,883
Miscellaneous	452	34
Office expense	5,381	9,934
Payroll taxes	7,529	7,659
Periodicals and subscriptions	88	284
Postage	1,919	3,526
Printing and duplication	46,647	41,353
Professional services	1,246	795
Rent and storage	20,540	18,956
Salaries	85,025	105,966
Telephone	855	1,611
Travel	4,601	10,073
Total	$ 222,169	$ 250,266

ASSOCIATION OF RESEARCH LIBRARIES
SPECIAL PROGRAMS

SCHEDULE OF REVENUE COLLECTED AND EXPENSES PAID AND CHANGES IN PROGRAM BALANCES
(with comparative totals for 1982)
(Modified Cash Basis)

	Office of Management Studies	Microform	Microform Preservation	Microform Clearinghouse
Revenue				
Grants	$ 181,900	$ 6,000	$20,000	$21,000
Sales of publications	65,337			
ARL support-transferred from General Operating Fund	95,000	1,087		
Management Institutes	61,478			
Interest income	10,992	510		949
Miscellaneous	900	810		
Total revenue	415,607	8,407	20,000	21,949
Expenses				
Consulting, computer and subcontractors	12,468	16,358	19,102	1,781
Depreciation	3,056			
Employee benefits	21,694			
Miscellaneous	4,941			
Office expense	37,225	2,865	410	314
Payroll taxes	10,823			
Periodicals & subscriptions	1,210			
Postage	8,506	261	157	9
Printing & duplication	34,816	261	61	
Rent & storage	13,469	1,154	2,443	
Salaries	170,350			
Stipend	12,000			
Telephone	7,791	340	337	31
Training (net)	17,262			
Travel	80,303	2,794	18	
Total expenses	435,914	24,033	22,528	2,135
Excess (deficiency) of revenue collected over expenses paid	(20,307)	(15,626)	(2,528)	19,814
Transfer to OMS	(106,624)			
Program balance, beginning of year	216,978	15,332	6,217	
Program balance, end of year	$ 90,047	$ (294)	$ 3,689	$19,814

Brasenose Conference	Index Grant (Wilson)	NCIP Phase I	NCIP Phase II	Conser A & I	Z-39	Year ended December 31, 1983 Total	Year ended December 31, 1982 Total
$	$	$43,500	$95,718	$30,000	$ 4,325	$ 402,443	$255,140
						65,337	82,979
						96,087	7..594
						61,478	102,014
			834	729		14,014	22,206
						1,710	1,029
		43,500	96,552	30,729	4,325	641,069	540,962
		120				49,829	43,185
						3,056	1,708
		3,778		220	552	26,244	30,785
2,060		4				7,005	2,085
		154	9	1,225		42,202	16,264
		210		335	363	11,731	10,665
						1,210	1,408
		30		20	3	8,986	12,616
		145				35,283	45,076
		1,200				18,266	23,091
		14,088		5,000	4,566	194,004	219,514
						12,000	
		304				8,803	11,439
						17,262	16,240
		4,505	606	104		88,330	80,575
2,060		24,538	615	6,904	5,484	524,211	514,651
(2,060)		18,962	95,937	23,825	(1,159)	116,858	26,311
						(106,624)	
2,060	2,175					242,762	216,451
$ -0-	$2,175	$18,962	$95,937	$23,825	$(1,159)	$ 252,996	$242,762

ASSOCIATION OF RESEARCH LIBRARIES

OFFICE OF MANAGEMENT STUDIES

SCHEDULE OF PROGRAMS

(with comparative totals for 1982)
(Modified Cash Basis)

	Academic Library Program	General Electric	Meyer Grant
Revenue			
Grants	$ 45,000	$ 125,000	$ 11,900
Sales of publications	65,337		
ARL support - transferred from General Operating Fund	95,000		
Management Institutes	61,478		
Interest income	4,977	6,015	
Miscellaneous	900		
Total revenue	272,692	131,015	11,900
Expenses			
Consulting, computer and subcontractors	9,000	3,068	
Depreciation	3,056		
Employee benefits	11,945	6,431	2,971
Miscellaneous	1,586	3,355	
Office expenses	6,396	30,829	
Payroll taxes	10,823		
Periodicals and subscriptions	1,210		
Postage	8,343		
Printing	33,625	1,002	
Rent and storage	11,969	1,500	
Salaries	105,634	52,427	11,004
Stipend		12,000	
Telephone	7,791		
Training (net)	17,262		
Travel	61,722	17,117	1,263
Total expenses	290,362	127,729	15,238
Excess (deficiency) of revenue collected over expenses paid	(17,670)	3,286	(3,338)
Transfer to fund balance of Office of Management Studies	(106,624)		
Program balance, beginning of year	115,594	97,043	2,399
Program balance, end of year	$ (8,700)	$ 100,329	$ (939)

Collection Assessment	Preservation (New)	SPEC Wilson	Year ended December 31, 1983 Total	1982 Total
$	$	$	$ 181,900	$ 237,140
			65,337	82,979
			95,000	75,000
			61,478	102,014
			10,992	18,209
			900	1,029
			415,607	516,371
400			12,468	8,670
347			3,056	1,708
			21,694	30,785
			4,941	1,525
			37,225	14,051
			10,823	10,665
			1,210	1,408
	163		8,506	11,992
		189	34,816	44,760
			13,469	20,313
1,285			170,350	214,764
			12,000	
			7,791	10,816
			17,262	16,240
161		40	80,303	78,132
2,193	163	229	435,914	465,829
(2,193)	(163)	(229)	(20,307)	50,542
			(106,624)	
1,550	163	229	216,978	166,436
$ (643)	$ -0-	$ -0-	$ 90,047	$ 216,978

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